

COMPUTERWORLD

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Sperry adds to micro line

**Launches AT-compatible
desktop, Link software**

By Eric Bender

BLUE BELL, Pa. — The Sperry Corp. Information Systems Group will roll out a host of micro products this month, spearheading its year-old campaign to become a major force in the microcomputer arena. Leading the charge will be a high-performance desktop system designed to compete head-on with the IBM Personal Computer AT.

Sperry's PC/IT personal computer, offering full compatibility with the high-end IBM micro and up to 45% greater throughput, will be announced and shipped today, said Michael Battaglia, marketing vice-president of Sperry's Americas Division. Built for Sperry by Mitsubishi Corp., the

system carries a starting price of \$3,650, about 10% less than that of the AT, Battaglia told *Computerworld*.

PC/IT beta user Edward Flynn, manager of concentrator and terminal software at Nasdaq, Inc. in Trumbull, Conn., said, "We've verified that whatever we can do on the AT, we can do somewhat better on the [PC/IT]." Noting that his shop has done only preliminary evaluations of the system, Flynn said that the PC/IT "is a very fast, powerful machine, and it appears to be a very stable machine."

The PC/IT will be joined in the next few weeks by versions of Sperry Link office automation software for Sperry and IBM micros, the PC/On-Line micro-to-mainframe link products, the mid-range PC/HT personal computer, enhancements to the Sperry Usernet local-area network and peripheral equipment.

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DP spending slump into second year

By Donna Raimondi

FRAMINGHAM, Mass. — The growth of DP spending has slowed for the second year in a row, according to International Data Corp.'s annual report, "User Spending on Data Processing."

From a consistent 15% per year growth pattern that had slowed to a 13% growth projection in the 1983-84 budgets, this year's survey results show only a 10.9% overall growth for 1984-85.

The IDC 1985 survey was based on responses from more than 500 data processing directors representing a broad range of businesses and professions. The report provides data concerning the use of funds by different industry classes, different sizes of data processing functions and the corollary issues involved in personal computer control. The growth projections are compared with historical and current industry growth rates and include an analysis of how and why they tend to differ.

Staff expenses still account for the largest use of DP funds in all organizations, totaling more than 40% in all size categories, the report said. As a rule of thumb, \$70,000 (salary plus expenses) is budgeted per person employed in a data processing department, no matter what size the organization is. There is a consistent relationship between the DP budget and the number of people employed in the department.

The second largest chunk of money consistently goes to hardware expenses, with an overall average of 29.1% of the budget.

Software and service expenses range from 8.7% in companies with a budget of more than \$10 million to 16.1% in the smallest installations — those with a budget below \$1 million. Part of the reason

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TOP OF THE NEWS

New architectures caught the spotlight in announcements of a high-end, parallel processing supermini from Perkin-Elmer and the first product in a minicomputer line from Datapoint. **Pages 2 and 4.**

Old systems never die, they just lose support. Users react to IBM's sooner than expected announcement of the end of its System/34 support. **Page 5.**

ISDN looms. Bell Atlantic took the wraps off its version of the Integrated Services Digital Network for 1987. **Page 15.**

Security threats are posed by magnetic tape disposal techniques that MIS departments use. **Page 73.**

Revised Cobol standard near

By John Gallant

After more than seven controversy-punctuated years, the labyrinthine approval process for the proposed Cobol 85 standard is nearly complete.

With the draft language standard awaiting only final, almost perfunctory, review at the highest levels of both the international and U.S. standards bodies, an endorsed, overhauled version of the existing Cobol 74 standard may become a reality by the end of 1985.

If approved, Cobol 85 — the name that the standard will bear if approval comes this year — will have survived years of vitriolic debate, a rift between interna-

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FYI

Chicago to L.A.: Arco's moving experience

By Jeffrey Seeler

As part of a recently announced reorganization, a major U.S. oil company has begun the lengthy process of relocating an information center from the Chicago suburb of Harvey and merging it with a second such facility in Los Angeles.

Although both centers belong to Atlantic Richfield Co.'s Petroleum Products Division, the one near Chicago primarily supports technical applications, and the site in Los Angeles serves nontechnical business users.

Arco attributes the merger, which is scheduled to be complete by Oct. 21, to the company's recent decision to close its Petroleum Products Division's research and development and engineering site in

the Chicago area.

In its heyday, the site employed approximately 350 scientists, engineers and other active users. Recent layoffs, however, have trimmed the installation's current staff to approximately 200 users, according to David Priebe, manager of the site's information management and computing systems.

By year's end, the work force will shrink even further to 120 users, Priebe said. All those remaining will relocate to other Arco installations throughout the U.S., the majority of them moving to the Greater Los Angeles area.

For the past 4½ years, the occupants of the Chicago-area research and engineering facility have derived their computing services from an information cen-

ter built around two IBM 4300 series units running VM. But after the employees complete their move, the source of their processing power will shift to the Petroleum Products Division's Information Technology group in Los Angeles. In addition to performing various corporate systems functions, the Information Technology organization runs an information center of its own, according to Robert Hahn, an Arco planning consultant.

To date, the Los Angeles center has existed primarily to meet the data base query and reporting needs of some 250 nontechnical business users in Arco's widely scattered Southern California offices. But starting Oct. 21, the center will expand the scope of its services by

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NEWSPAPER

NEWS

PE multi-CPU supermini bows

Firm sees parallel processing technology as 'the way to go'

By James Connolly

NEW YORK — Making a long-term commitment to a parallel processing architecture, Perkin-Elmer Corp. unveiled a multiprocessor system that company spokesmen claimed offers three times the price/performance of the Digital Equipment Corp. VAX 8600. PE's Data Systems Group announced its 3280MPS multiprocessor system at a waterborne press conference held aboard a yacht on the Hudson River last week.

The Ocean City, N.J., firm said the 3280MPS, which carried the code name Cruncher during development, represents both a high-end machine for PE's 3200 supermini computer line and a new architecture on which to build PE's future systems. "Parallel processing is the way to go, and not just for three or four years. We are every bit convinced that it is the architecture of the future," said James K. Sims, senior vice-president of the Data Systems Group. Sims added that PE has no plans to develop uniprocessor systems in the future.

The 3280MPS, consisting of up to six tightly coupled 3280 uniprocessors, will perform 4 million to 22 million instructions per second (Mips) in a commercially oriented environment or 12 million to 60 million whetstone instructions per second in a technical environment, according to PE.

The system is said to use a four-stage pipeline design, two 8K-byte caches on each processor and an integral 64-bit floating-point processor. The four-stage pipeline was designed to allow simultaneous execution of instruction fetch, address calculation, operand fetch and execution. Memory capacity starts at 2M bytes and is expandable to 16M bytes. The system includes PE's 64M bit/sec. System Bus and uses Advanced Shottky Logic.

PE said that the 3280MPS' modular design allows for plug-in expansion. The processors share memory with a single processor acting as the central processing unit and the others acting as auxiliary processing units or as I/O processors. In the

event of a CPU failure an auxiliary or I/O processor can be shifted into the CPU role, PE said.

The 3280MPS supports PE's OS/32 real-time multitasking operating system and, in uniprocessor configuration, PE's Xelos, which is based on AT&T Unix System V Release 5.2.

Some Risc concepts incorporated

Sims said the system is not a reduced instruction set computer (Risc) but that PE did use some Risc concepts by installing commonly used Fortran VII, Cobol and C instructions in the microcode. Other supported languages include RPG II, Pascal, Coral 66 and Basic II.

Sims said a key benefit is that the 3280MPS is compatible with all existing PE programs used on the 3200 line. However, the other systems in the 3200 line are not upgradeable to the 3280.

The system will be distributed through value-added resellers and system integrators. It is targeted to general-purpose computer applications; real-time transaction processing, such as financial applications; government applications, such as military simulations, data communications monitoring and management; and scientific and engineering applications.

Acknowledging that the DEC 8600 is the standard with which supermini vendors must compare their products, Sims claimed that the cost of 1 Mips of computing power in the 3280MPS is \$30,000, compared with \$100,000 for an 8600 in a clustered environment. He also claimed that a 4-Mips configuration for an 8600 requires 16 sq ft of floor space, compared with 5 sq ft for a 16-Mips 3280MPS.

The 3280MPS is not PE's first step into the parallel processing field. Sims said there are 300 installations using PE 3260 and 3230 systems in parallel processing configurations.

Available 90 to 120 days after receipt of order, the basic 3280MPS configuration is the 3281MPS with 2M bytes of noninterleaved memory, one 10M bit/sec. direct memory interface, eight channels, a 20-slot I/O chassis, a 64-bit floating-point processor and system console. It costs \$250,000 and is discountable to \$150,000 in quantities of 100. Additional processors start at \$120,000.

SEC settles with Paradyne

By Clinton Wilder

LARGO, Fla. — After more than two years of bitter charges and \$5 million to \$6 million in legal fees, the U.S. Securities and Exchange Commission's (SEC) lawsuit against Paradyne Corp. ended last week with a dull thud.

The settlement, reached just two days before the suit's scheduled trial date in federal court in Tampa, Fla., required no admission of wrongdoing by Paradyne and contained no punitive SEC action against the systems and communications equipment vendor. Paradyne simply agreed to comply with federal securities law in the future.

The highly publicized suit was one of several government actions against Paradyne, most of which remain pending. The suit alleged that Paradyne officials defrauded and deceived Social Security Administration (SSA) officials in winning a \$100 million SSA nationwide computer network contract in 1981 [CW, April 4, 1983].

During the contract bid process, Paradyne employees allegedly reconfigured a Digital Equipment Corp. PDP-11/03 minicomputer and demonstrated it as a Paradyne product. The SEC further charged that Paradyne's bid included terminals and data encryption devices not yet available and that the company's prebid demonstration used "an empty box with blinking lights" for what the firm claimed was a working communications device.

Although Paradyne executives expressed satisfaction with the settlement, analyst Andy Schopick of the Stamford, Conn.-based Gartner Group, Inc. called it "a Pyrrhic victory" for the company.

"It comes too late to really help Paradyne restore its competitive position," Schopick said. "I think the damage has been done. The settlement is really a nonevent. I don't think the SEC ever had a really solid case, and it was unfortunate that Paradyne management responded in such a contentious way. Whatever the circumstances were that led up to this, I don't think the SEC had cause to be involved."

Random access

In conjunction with the Unix Expo in New York later this week, Computer Consoles, Inc. — the company to which former Wang President John Cunningham recently jumped — will announce a "high-performance [AT&T] Unix engine," according to a company spokesman. The company claimed that "The Little Engine" was benchmarked at 10 times the price/performance of the DEC VAX-11/780 supermini.

A spokeswoman for the Cahners Exposition Group confirmed last week that the Info show slated to be held at the Infomart in Dallas in January has been postponed until 1987, with no firm reschedule date. She said the decision to hold off on the conference was based on a re-vamping of Cahners' entire family of Info conferences. The original Info conference will go on as planned in New York next month. She also said there will no longer be a show named Info/Software or Info/Central. The two lightly attended shows were held jointly at the O'Hare Exposition Center in Ro-

sement, Ill. in February this year.

Within two months, IBM will announce a replacement for the 3274 controller that may be a key component of Big Blue's long-anticipated token-ring network scheme, according to Paul Rampel, president of the Berkeley, Calif.-based Orion Group, Inc. network software vendors and consultants. Rampel maintained that a paper published by IBM engineers in the February issue of the *IEEE Journal on Selected Areas in Communications* outlined the blueprint of the controller. The product will incorporate IBM's Logical Unit 6.2 (LU6.2) protocol allowing peer-to-peer communications across the firm's diverse product line. IBM does not now support the LU6.2 protocol in the 3274 controller and the IBM Personal Computer. "We feel the 3274 replacement is imminent and is linked to IBM's token-ring strategy," Rampel said. As evidence of the pending announcement, Rampel cited IBM's July announcement of the price cuts for the 3274 and 3276 controllers.

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NEWS

Datapoint launches Starship line of mini systems

By James Connolly

SAN FRANCISCO — Introducing the first product in its Starship line of minicomputers, Datapoint Corp. last week announced a system using a multiple operating system architecture and offering four times the memory and twice the disk storage capacity of its previous high-end computer.

In addition, Datapoint announced a local-area network management system, three storage subsystems, an electronic mail gateway and enhancements for its Pro-Vista office automation package.

The Starship product, the Datapoint 8850, was designed to replace Datapoint's previous high-end system, the 8800, and to be the first of a series of new or enhanced minicomputers to be released in the next year and a half under the Starship program, according to a company spokesman. He said the Starship line features an architecture that integrates multiple operating environments in conjunction with Datapoint's Attached Resource Computer (Arcnet) local-area network.

The 8850 has a minimum memory of 512K bytes

and a maximum memory of 4M bytes. According to Datapoint, the 8850 supports both Datapoint DOS and Datapoint RMS, which is a capability not available on earlier systems. The spokesman said the 8800 can be traded in for credit toward purchase of an 8850.

The basic 512K-byte, 24-user 8850, which will be available in October, costs \$16,500.

Datapoint announced two disk subsystems for the 8850, the 9348 and the 9349. The 9348 is a 9-in. removable disk drive providing 67M bytes of storage. The 9349 is a high-performance, 9-in. fixed drive with a capacity of 266M bytes. The 9349 can be configured in a string of four drives with a total capacity of 2G bytes. Scheduled for October deliveries, the 9348 costs \$14,500, and the 9349 costs \$22,500.

The Mail Gateway Facility announced last week was designed to allow interchange of information among RMS-based systems, DOS-based systems, mail systems made by other vendors and customized software applications such as order entry.

Now available, the gateway costs \$500.

A disk and tape subsystem was announced for use with existing Datapoint 8600 minicomputers. That mid-range storage system, the 9336 Disk/Tape Subsystem, was designed to provide 65M bytes of fixed-disk storage and a streaming tape drive. It costs \$14,500.

An extension drive, the 9337, providing another 65M bytes of disk space, costs \$9,500.

The Datapoint communications announcements included the Intelligent Network Management Facility (INMF) and the Intelligent Hub for Datapoint's Arcnet. The INMF consists of an Intel Corp. 80186-based diagnostic and control processor and software.

The INMF was designed for large networks of 40 to 50 computers.

The Intelligent Hub is a physical connection unit that allows up to 16 devices, including additional hubs, to be linked into Arcnet. The basic INMF system costs \$13,995. Each hub costs \$1,350.

AT&T touts voice system

Pitfalls, potentials of speech recognition

By Paul Korzeniowski

SAN FRANCISCO — Talking computers have been a part of American folklore since Hal starred in 2001: A Space Odyssey. Last week, AT&T announced a voice system that illustrates both the potential of such a system and the technical problems that have to be overcome to make it a reality.

At the annual conference of the American Voice Input/Output Society last week, AT&T introduced the Conversant 1 voice system. The product, designed in modular fashion, works as a system controller, sitting between up to 32 telephone lines and a host computer.

The Conversant 1 comes equipped with dual 80M- or 140M-byte hard disk drives. Telephone lines are connected through RJ-11 plugs. A variety of speech peripherals can be attached to an IEEE 488 bus. A coaxial cable attaches the device to host systems supporting asynchronous, Synchronous Data Link Control and Binary Synchronous Communications protocols. With the Conversant 1 voice system, a customer could dial a number and receive information in a process similar to dialing up a weather report.

The Conversant 1 voice station incorporates two types of speech recognition. Speaker-dependent systems are designed to be used by one or two

individuals. Users enter words so that the system later will recognize them when spoken. The principal shortcoming to these systems is that they are limited to a few individual users.

Speaker-independent systems recognize words regardless of who utters them. AT&T claimed that the Conversant 1 will recognize the words "yes" and "no" and 6,000 combinations of numbers.

"Many companies claim to have speech recognition capabilities. The important item is how accurate these systems are," noted B. H. Poetsch, an independent consultant from Anaheim, Calif., who specializes in voice recognition.

AT&T claimed that its employees were invited to test the Conversant 1 system, and the result was that 19 out of every 20 items input were understood.

The company stated that the cost for each channel without speaker recognition capabilities would be between \$2,500 and \$3,000. Historically, speaker recognition capabilities have been expensive, and AT&T refused to provide a price range for its systems.

To market and support the product, AT&T has formed a business unit called the AT&T Conversant System, based in Columbus, Ohio. AT&T listed credit card verification, stock quoting and market research as a few applications for the product. Fidelity Systems in Boston plans to use the product to allow its 6,000 users to access stock quote data.

Wang unveils link tools

By Paul Korzeniowski

LOWELL, Mass. — Wang Laboratories, Inc. opened its arms wide and today announced five products that connect its products to those from other vendors.

The products were designed to support AT&T Premises Distribution System, the IBM cabling plan, IBM's PC Network, Ethernet and asynchronous twisted-pair wire transmission.

"Wang is attempting to hedge its bets so that its products will work with whatever networking schemes become dominant," noted Greg Carlsed, industry analyst at Dataquest, Inc., a San Jose, Calif., market research firm.

The Wang-to-IBM Cable Adapter links Wang peripherals to Wang computers via shielded twisted-pair wiring used in the IBM Cabling System. Each adapter consists of a link from a Wang device to an IBM wall link. Connections are required for both the Wang Computer and its peripheral. Cable adapters, priced at \$100 a pair, are now available.

The IBM PC-Net Service enables IBM Personal Computers equipped with the IBM PC Network option to attach to Wangnet, the firm's broadband network. A Personal Computer would require Wang's IBM PC-Net

Adapter as well as IBM's PC Network option to work with Wang's network offering. The IBM PC-Net Adapter costs \$400 and is available now.

The Ethernet attachments enable a user to configure up to five Ethernet channels on Wangnet. A Medium Access Unit connects to Wangnet and supports up to eight Access Unit Interface ports that can drive one Ethernet device. The Access Unit Interfaces are equivalent to Ethernet transceivers. The Medium Access Unit will be available in November and will cost \$3,500.

The Enhanced Asynchronous Device Controller links asynchronous terminals to Wang VS minicomputers over twisted-pair wiring at speeds of 19.2K bit/sec. The product will be available in November at a cost of \$2,800.

The Wang Twisted Pair Balun connects Wang peripheral devices to Wang VS or OIS minicomputers via twisted-pair wiring. A Twisted Pair Balun is required for both the peripheral and the computer, with a maximum range of 400 feet.

The Twisted Pair Balun was developed by AT&T Information Systems for Wang. No price was given for the product, which will be available in the second quarter of 1986.

CORRECTIONS

The Hardware Roundup for mainframe systems [CW, Aug. 19] included incorrect information about various Burroughs Corp. products.

For the A9-F, the listed price of \$613,000 is for a 12M-byte configuration, while the correct memory range is 12M to 24M bytes, and the channel availability is 8 to 40 channels. The correct relative performance rating for the B7900E is 199 and is 700 for the B7900K. The three-year lease price for the B7900F is \$86,529 and is \$127,862 for the B7900H. The

memory range for the B7900E is 6M to 18M bytes.

The memory range for the A 15 Model F is 24M to 96M bytes. For the B1990SP, the relative performance is 19, and the speed is .27 million instructions per second. The number of channels available on the B2925 ranges from 6 to 16, and the correct price for a 1M-byte memory upgrade for the B2925 and B3955 is \$12,000. The product data listed for the B5919-2 should have been listed under the title V380.

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NEWS

IBM withdraws support for System/34 software

By John Desmond
and John Gallant

Members of the nearly 50,000-member community of IBM System/34 users last week expressed surprise about the timing of Big Blue's decision to withdraw software support for the minicomputer.

IBM informed System/34 users late last month that, as of Feb. 21, 1986, it will no longer support the machine's SSP operating system and a variety of other key software products. IBM has been easing out of its commitment to the System/34, which has not been sold by the company since 1984, and users said they were expecting IBM to curtail both software and hardware support sometime in the future.

But the withdrawal of software support came much sooner than expected, in a move that users and analysts said could only be interpreted as an attempt by IBM to speed user upgrades to the more expensive System/36 and to bolster the Armonk, N.Y.-based giant's fourth-quarter

free," Teresi said, the end of software support will cause few problems for current users. He said users who choose to migrate up to the System/36 can port System/34 applications fairly easily and at little cost.

"The System/34 was very popular among users," Teresi said. "It was easy to operate and easy to program for."

But, he added, "It is ironic that, while IBM dropped support, it did not lower the price for any of the software. In fact, some System/34 software product prices were increased just this June."

Norris Cox, DP manager for William T. Burnett & Co., a polyurethane foam manufacturer based in Balti-

more, told *Computerworld* last week that he "does not appreciate" IBM's attitude toward its base of System/34 customers.

"The announcement does not bother me on a practical level because we have never relied on IBM's service," said Cox, whose company operates a System/34 alongside a System/36. "But it indicates IBM's attitude toward its users. They should be continuing service for a box that is so widely installed."

Several users said they had already turned to third-party maintenance firms or to independent programming contractors for System/34 software and hardware support. They said others will probably follow

in those footsteps.

One such user is Framingham, Mass.-based Waters Business Systems, Inc., which relies on two System/34s to develop marketing and sales information software. Vice-president Evelyn Liffiton said, "IBM has been treating the System/34 as a nonexistent machine for more than a year. I do not think this decision will impact us because we do not require any hardware or software support from IBM."

Liffiton said the company will continue to target software products to the System/34 market. "There is no reason for us to ignore that market with so many machines out there," she said.

Tools to be cut

Among the System/34 program products that will no longer be supported by IBM as of February 1986 are the following:

- System Support Program.
- RPG-II.
- System/34 assembler; Basic, Fortran and Cobol.
- System/34 utilities.
- System/34 device emulation.
- System/34 business charting program.
- System/34 File Support/IBM Personal Computer.

revenue.

"It is quite blatantly an attempt to force System/34 users over to the System/36," said Frank Gens, industry analyst with the Framingham, Mass.-based market research firm International Data Corp. (IDC). As of January 1985, IDC estimated that there were some 58,000 System/34s installed. But Gens said migrations to the System/36 have likely pared that base to more than 45,000.

IBM introduced the System/34 in 1977, and it is estimated that the machine had been installed in roughly 65,000 U.S. sites by the time the System/36 was unwrapped in 1983.

"The announcement looks like an effective way to stimulate System/36 sales in the fourth quarter. That is something IBM really needs," Gens said. "But it seems extreme for a machine that has such a huge installed base. It seems to be forcing the issue prematurely."

Tom Teresi, chairman of the Common IBM users group System/34/36 project and president of Tom Teresi, Inc., a Minneapolis-based consulting company, agreed with Gens' assessment.

"The announcement certainly came sooner than expected," he said. "IBM traditionally supports products for a longer period. But it seems [that] IBM was just thinking of itself."

Because the latest version of SSP — Release 9 — is "relatively bug

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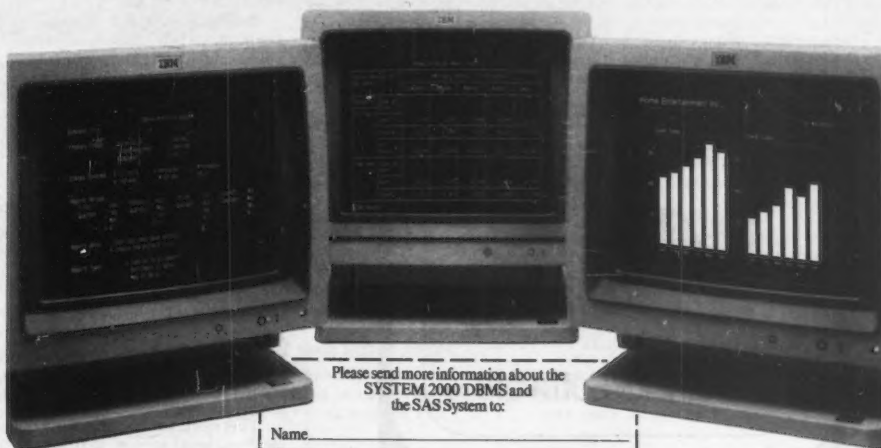
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NEWS

From page 1

Chicago to Los Angeles: Moving an Arco facility

co-opting all the functions of its Chicago-area counterpart, Hahn said.

Although the Illinois information center's 4381 and 4341 are used mainly for technical applications, they provide a "full range of functionality," including office automation, management decision support and personal computing, Priebe said. For the first two years or so after its founding in February 1981, the Harvey center relied heavily on a team of professional applications developers to address its users' in-house computing demands. Since then, however, the users have largely weaned themselves from any professional programming support, Priebe said. "Strictly speaking, we have no central data processing staff here in this facility," he said. "We are basically an end-user operation and dedicate our mainframes to the needs of our technical and managerial clients."

In keeping with the information center ideal, many of the Chicago facility's users have long performed most of the systems tasks that might otherwise have been assigned to computing professionals. Because many of the users already had strong scientific and engineering backgrounds, they were considerably more receptive to information systems than the average computing novice and found the technology comparatively easy to master.

"Our people, because of their highly technical training, have tended not to be afraid to dig in and use the systems" at their disposal, Priebe said.

But even the most technically adept of the information center's users fell short of complete systems self-sufficiency. So throughout much of its existence, the center maintained a staff of 10 full-time user support representatives and provided access to Focus, a fourth-generation programming language that helps clients write their own applications, Priebe said.

For more than four years, the information center and its assortment of end-user computing tools stood the Petroleum Products Division's technical operations in good stead. Then, on April 29, Arco announced a companywide reorganization aimed at streamlining its operations and cutting its overhead in the face of falling world oil prices and shrinking profit margins.

The shake-up calls for the Petroleum Products Division to centralize its nationwide resources — including its information centers — in Los Angeles and, in so doing, minimize the mushrooming cost of transporting Arco's Alaskan crude oil to market.

Arco recently took the first step toward relocating the Harvey information center when the company shipped a copy of the end-user computing facility's software to the Information Technology group in Los Angeles.

There, the programs will be merged with the West Coast information center's software. The result will be an integrated system that will be tested on an IBM 4341 Group II for three weeks, Hahn said.

In the meantime, the Petroleum Products Division will also begin to transfer the users in its Chicago-area location to their new workplaces in Southern California. The first of the transplanted employees, in fact, were scheduled to arrive at their destinations by Sept. 1, Priebe said.

During the coming four or five weeks, all the new arrivals will continue to obtain their computing services from their familiar information center back in the Midwest. But to gain access to the system, they will rely on 9.6K bit/sec. phone lines rather than the local IBM 3270 terminals they have typically used in the past, Priebe said.

At the close of business on Oct. 18, the Petroleum Products Division will permanently shut down its Chicago-area information center system and send a copy of its latest user files to Los Angeles by overnight courier. On Oct. 19, the Information Technology group will begin loading the files into the integrated information center

Atlantic Richfield Co. Information Center Metamorphosis

Old Los Angeles Information Center

- IBM 4381
- 3084 Model Q
- Corporate, Business
- DOS/VSE SNA¹
- IMS

Old Harvey, Ill., Information Center

- IBM 4381
- 4341
- Technical
- Focus
- Profs²

New Los Angeles Information Center

- IBM 4381
- 3084 Model Q
- Corporate, Business
- Technical
- DOS/VSE
- IMS
- Focus
- Profs²

¹ IBM's Systems Network Architecture
² IBM's Professional Office System

Arco is consolidating its data centers to Los Angeles.

system, which will later be moved from its test processor to a 4381 Group I that will serve as its production environment.

At 8 a.m. on Oct. 21, the transplanted users will formally convert from the Chicago-area information center to its West Coast successor, which they will thereafter tap by means of 56K bit/sec. communications links.

Between Oct. 21 and year's end, another 50 to 70 Chicago-area users are also expected to relocate to Southern California. But before they do, they will still be able to avail themselves of the integrated information center system in Los Angeles, albeit as remote users, Priebe said.

But the merger of the Chicago and Los Angeles information centers involves much more than just transporting workers and shipping user files. The union will consolidate two sets of mutually complementary systems capabilities and thus enable each information center to broaden its user services by drawing upon the other's exclusive resources, Hahn said.

For the facility that will be relocating from Chicago, the merger will link users for the first time to Arco's nationwide IBM Systems Network Architecture (SNA) network and provide electronic access to the company's corporate data base. For the center in Los Angeles, meanwhile, the systems marriage will form the technological starting point for the development of both an electronic mail network and a centralized document retrieval service, neither of which the site now supports.

Most of those Arco employees who survive the Chicago site's layoffs will follow their end-user computing system to Southern California, where the two integrated information centers will share a 4381 Group I. To accommodate the expected increase in work load, the Information Technology organization plans to expand its processor to a Group II in mid-September.

The upgrade will entail little more than the installation of a few additional circuit boards and will take "only about eight hours," Hahn said. "Our parts are already on order."

To a large extent, the differences between the two information centers' client bases reflect a similar divergence in their installed systems resources. In Chicago, for example, users routinely avail themselves of a 50,000-item document retrieval service that depends for its existence on IBM's Professional Office System, which to date has been unavailable at the information center in Los Angeles.

On the other hand, the end-user computing facility on the West Coast supports DOS/VSE as a guest operating system under VM and thus satisfies one of the technical prerequisites for functioning in an SNA environment. The center back in the Midwest, by contrast, runs only VM, which by itself is incapable of supporting SNA.

The Los Angeles site also differs from its Chicago cousin in another important respect: Its 4381 serves as an intermediary between its customers and Arco's corporate data base, which resides in a 3084 Model Q running IMS.

"We've found over the years that IMS presents data from an accountant's or clerk's standpoint but that most of our users want to look at information from a line manager's perspective," Hahn said. "So we have a 4381-resident program that extracts corporate data from IMS, transforms it from a bookkeeper's point of view to a business point of view and downloads it through our information center to our clients."

The resulting ability to query Arco's corporate data base has hitherto remained beyond reach of the firm's information center near Chicago. But once the Illinois and California facilities merge, each will gain access to the other's systems and will be able to upgrade its computing capabilities accordingly.



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NEWS

Milestones on Cobol 85's road to approval

June 1978: Work begins on Cobol 85 standard to replace Cobol 74.

January 1981: Joseph T. Brophy, senior vice-president of Travelers Insurance Co., threatens litigation against American National Standards Institute (Ansi) members if they approve proposed Cobol 85 standard. Concerns, embraced by management in many companies, are based on cost of conversion of earlier Cobol programs because of incompatibilities in the proposed Cobol 85 standard [CW, Jan. 26, 1981].

October 1981: Data Processing Management Association (DPMA) says it is strongly opposed to proposed Cobol 85 standard [CW, Oct. 26, 1981].

February 1982: Initial four-month period of public review closes. Overwhelming majority of more than 2,200 responses is against proposed Cobol 85 standard [CW, March 15, 1982].

January 1983: DPMA withdraws earlier objections to Cobol 85 standard, citing responsiveness of Ansi members to public concerns [CW, Jan. 10, 1983].

April 1983: One-year National Bureau of Standards study on impact of Cobol 85 concludes that conversion will present few problems [CW, April 25, 1983].

February 1984: International Standards Organization (ISO) Cobol body meets in Vienna and moves for final approval of current draft of Cobol 85, even though one period of public review remains in Ansi procedures. ISO also changes procedures for revising Cobol to allow for addition of new features every two years and to extend period between complete overhauls to 10 years [CW, Feb. 20, 1984].

July 1985: ISO ballot on Cobol 85 standard completed; document approved 19:1. ISO Working Group 4 tentatively plans to submit document to ISO Central Secretariat by November for final approval.

August 1985: Ansi Cobol committee forwards final document to Ansi Board of Standards Review (BSR) for final review. BSR approval of Cobol 85 standard expected by year's end. (Final two periods of public review completed before the document was forwarded to BSR drew, respectively, about 925 and 25 letters. The second attracted primarily negative responses. The majority of responses in the third were in favor of the proposed standard.)

CW Staff

From page 1

Revised Cobol standard may be ready in late '85

tional and American standards organizations, and efforts to reform the protracted procedures for upgrading the language. The standards makers, who weathered years of intense criticism and even threats of legal action, will have achieved their goal of making Cobol a more viable modern-day systems development tool.

According to Lemuel Skidmore, vice-chairman of the American National Standards Institute's (Ansi) X3J4 Cobol subcommittee and founder of Clinton, Conn.-based Skidmore Resource Management Co., the parent X3 Cobol committee last month forwarded the proposed Cobol 85 standard to Ansi's Board of Standards Review for final approval.

Skidmore, who has acted as chairman of the X3J4 subcommittee since the resignation of former Chairman Donald Warren, said the board will review the language document not for its technical merits but to ensure that drafters have complied with Ansi procedures for standards development. The standards board is slated to meet this month and will later vote by letter ballot on the draft standard. Warren said the draft will likely be approved before 1986.

The only possible obstacle on the U.S. side, in Skidmore's view, may be the board's concern for the "sheer volume" of negative comments the draft drew when it was released for public review.

The first period of public review drew some 2,200 responses, the majority of them negative form letters in reaction to an earlier draft's incompatibilities with the Cobol 74 and Cobol 68 standards. The second public reviewing resulted in nearly 1,000 responses, the bulk of which were also negative. The final period drew fewer than 25 responses because standards makers had addressed many of the earlier concerns.

"The fact that the number of negative comments dropped precipitously should make a big difference," Skid-

more told *Computerworld* in a recent interview. "Many of the former detractors felt that their concerns had been adequately addressed."

The draft Cobol 85 standard reached the Board of Standards Review only after weathering three ballots this summer in the X3 committee, which received the final document earlier in the year from the X3J4 subcommittee. Skidmore said that throughout the balloting, a representative of the Travelers Insurance Co. of Hartford, Conn., consistently cast a negative vote, citing incompatibility concerns.

That almost-wholehearted support of Cobol 85 also characterized the last days of the International Standards Organization's (ISO) Cobol efforts. According to Mabel Vickers, convener of ISO's Working Group 4 on Cobol and programming language project officer with the U.S. National Bureau of Standards, voting by key ISO-member countries on the international Cobol standard was completed in mid-July.

Vickers said only one country, Australia, voted against the international Cobol standard, primarily because of the format in which the standard was presented. Working Group 4 is scheduled to present the Cobol 85 standard to ISO's central secretariat by the end of November. Vickers said, "The central secretariat will review the manuscript to ensure that it is in accordance with ISO's guidelines and procedures."

Cobol 85 includes two areas of change

Experts involved in the Cobol standardization process say the changes embodied in Cobol 85 fall into two main classes: the addition of new functions designed to make Cobol more useful, especially in structured programming; and modifications aimed at resolving ambiguities in the language.

The following is a sampling of some of the features of Cobol 85. Structured programming features include the following:

- Added EVALUATE verb, which provides a means of testing multiple conditions and specifying multiple control branches.

- Added structured conditional statements, including 19 scope terminators such as END-IF and END-READ, which allow nested conditional statements to be stated clearly.

- Allowance for nested programs, so that complete programs can be contained within other programs.

- Added INITIALIZE verb, which allows programmers to initialize at one time a series of data items.

- Added DO-WHILE and DO-UNTIL versions of PERFORM that allow testing before or after execution.

- An Added CALL-BY-CONTENT command that allows users to pass data between programs while guarding data content from modification.

Data manipulation features include the following:

- A reference modification feature that allows programmers to reference a portion of a data item without having to REDEFINE the portion.

- Seven added levels of subscripting, allowing a table to have up to seven dimensions. Only three dimen-

sions are specified in Cobol 74.

- Added relative subscripting ability that allows a variable used as a subscript to be increased or decreased.

I/O processing features include the following:

- New variable length records.

- Added I/O status codes, which allow a programmer to distinguish a variety of exceptional conditions.

- Added communications status and error keys.

— John Gallant

Cobol stays healthy in changing times

Predictions of Cobol's eventual demise began to be heard not long after the programming language was born in the late 1950s.

Although such dire prognostications are not new, they have in recent years taken on new urgency. Fourth-generation languages have made inroads into many mainstream data processing environments. In some cases, they have even supplanted the venerable Cobol entirely.

Fourth-generation language vendors have been able to capitalize on perhaps the two most widely shared concerns of DP professionals: increasing programmer productivity and easing maintenance work loads. Many critics contend that Cobol is not effective in solving those problems, that it is a dinosaur born in a time when both the demand for applications and programmer salaries were much smaller.

Agreeing that portions of that criticism are valid, proponents claim the nearly ratified Cobol 85 standard does much to make Cobol a more viable tool for systems development. Advocates of Cobol say the enhancements in Cobol 85 make the language more productivity oriented and aid in the development of systems that are more easily maintained.

"In Cobol 85, we added new features, such as structured programming facilities, additional verbs and new ways of delimiting statements," said Lemuel Skidmore, vice-chairman of the American National Standards Institute's X3J4 Cobol group. "We also clarified many ambiguities."

According to Jerome Garfunkel, also a member of X3J4 and founder of Jerome Garfunkel Associates, Inc., a Litchfield, Conn.-based Cobol consulting firm (see story page 41), the increasingly onerous maintenance task was foremost in the minds of Cobol 85 drafters.

"If I had to pick one area in which Cobol 85 is strongest and [name] the group it will benefit most, it would be the maintenance function and maintenance programmers," Garfunkel said. "One of the biggest lessons we learned is that we better build systems expecting them to change. There is no language I know of that is better for that task than Cobol."

"Most of the fourth-generation languages can do what Cobol does and do it more efficiently," he said. "But you have to consider why Cobol was developed in the first place. Industry needed a common, portable language. I see nothing in the way of fourth-generation languages emerging to take on that role."

— John Gallant

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| Boston | Oct 15, Nov 12, Dec 11 | New Orleans | Nov 19 | San Antonio | Oct 23 |
| Chicago | Oct 16, Dec 12 | New York City | Oct 10, 25, Nov 6, Dec 12 | San Diego | Nov 7 |
| Cleveland | Nov 5 | Newport Beach | Oct 17 | San Francisco | Nov 5 |
| Columbus | Oct 8 | Oklahoma City | Nov 7 | San Jose | Oct 24 |
| Dallas | Oct 8, Nov 13 | Omaha | Oct 24 | Seattle | Oct 2, Nov 26 |
| Dayton | Oct 9 | Orlando | Oct 15 | Syracuse | Nov 7 |
| Denver | Oct 29, Nov 20 | Phoenix | Oct 9 | Tulsa | Oct 29 |
| Detroit | Oct 22, Nov 12 | Portland | Oct 10 | Washington | Oct 10, 24, Nov 7, Dec 10 |
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NEWS

From page 1

Sperry boosts microcomputer line

"We're committed to becoming a major force in the micro/personal computer world," Battaglia said. He estimated that micro-based products — ranging from personal computers to Motorola, Inc. 68000-based supermicrocomputers — will represent approximately one-third of the total bookings for his division in the fiscal year that ends in March. "Obviously, that's a pretty big number."

The new desktop system is "a very concrete example" of changes that have taken place at Sperry during the past several years, Battaglia said. "First, it's a product that we're getting from outside. The 'not-invented-here' syndrome is a cadaver at Sperry."

Other new directions include the recent move to supplement direct sales with indirect channels, with a sizable fraction of Sperry's 200-member U.S. sales staff dedicated to micro products concentrating on resellers. Finally, Sperry is marketing and promoting new products much more aggressively, he said.

Based on the Intel Corp. 80286 chip running at 6, 7 or 8 MHz, the PC/IT comes with 512K bytes of random-access memory, expandable to 5M bytes; a 5¼-in., 1.2M-byte floppy disk drive; two asynchronous ports and a parallel port; eight expansion slots; Microsoft Corp.'s MS-DOS 3.1 and GW Basic; and a clock. An expanded unit with a 44M-byte, unformatted hard disk drive and controller costs \$5,150. Running under Microsoft's Xenix operating system, a \$995 option, the system can support up to nine users.

Standard interface for office system

The Sperry Link software for Sperry and IBM Personal Computers, scheduled for announcement later this month, will give users of those machines a standard interface for the Sperry office system, said Joseph Gariano, director of micro products marketing. "The user will always see the same screen." Base price for a package providing the Sperry Link screen and word processor is \$350, and many other Sperry Link applications also will be offered.

PC/On-Line, which Sperry quietly began shipping in August and which will officially debut later this month, is a menu-driven software package that links MS-DOS-based personal computers with the company's 1100 series mainframes. The software has the following three components:

■ On-Line Disk, priced at \$630, gives the micro user access to mass storage on the mainframe.

■ On-Line Extract, which also costs \$630, permits the personal computer user to extract Mapper data from Sperry 1100, System 11, Mapper 10 or Mapper 5 machines and then manipulate the data locally.

■ On-Line Transfer, at a cost of \$250, handles synchronous transfer of Ascii files between Series 1100 hosts and the micro.

The PC/HT, which Sperry began delivering in August but will be officially rolled out next week, is an enhanced version of the basic Sperry Personal Computer. A base configuration costs \$2,322 with monitor and 256K bytes of internal memory. A high-end system with a color monitor and a 20M-byte hard disk drive will cost \$4,750.

From page 1

IDC report: DP spending slump continues for second year in a row

for the variance is that most independent software producers charge for software licenses by site, which means that a single-CPU site would pay as much for a general ledger software package license as would a large site with several more powerful computers.

There appears to be a movement toward the need for more programmer/analysts with specific applications experience as opposed to Cobol programmers who can "crank out the code." Operations and maintenance are absorbing an enormous number of the available personnel in spite of the rise of productivity tools. "One begins to fear that the picture will take on the image of a sinking lifeboat 100 feet offshore. Everybody is bailing furiously, and nobody has the time to row or steer," the report stated.

DP spending as a percentage of revenue varies widely by industry type. In banking, DP spending as a percentage of assets was 0.35%. The highest figure was for education, which showed DP spending at 2.8% of revenue.

Other industries included primary metals at 1.65%, manufacturing at 1.7%, utilities at 1.1%, insurance at 2.2%, transportation at 1.35%, state and local government at 1.7% and retail at 1.2%.

According to the report, 79% of companies with DP budgets in the \$5 million-to-\$10 million range claim to have full control of microcomputers in their organizations, but that claim varies widely among companies. For instance, 47% of the smallest companies, having up to \$1 million budgets, claim such control, and 49% of companies with budgets of more than \$10 million purport to have full control of micros. Fifty-nine percent of \$1 million-to-\$2 million budget companies make the claim, as do 53% of companies in the \$2 million-to-\$5 million range. Overall, 56% of all companies surveyed said the DP department has full control of microcomputers.

An IDC study based on other research and mentioned in this survey showed that four out of five personal computers are stand-alones, and for those that do talk to others, the communication is focused on sharing the same printer and hard disk.

The report, which costs \$1,500, is available to IDC's user client base and its vendor client base.

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IBM PC Update
December, 1984

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ComputerWorld
March 20, 1985

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PC Magazine
February 19, 1985

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Software Digest Ratings Newsletter
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December, 1984

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Popular Computing
March, 1985, Paul Goldner, Raymond Hood,
Yoram Lirtzman, Michael Wilding

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January, 1985

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April, 1985

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Computer Buyer's Guide
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NEWS

Ashton-Tate unveils Framework II integrated software

By Jeffrey Beeler

PALO ALTO, Calif. — Ashton-Tate of Culver City, Calif., last week replaced its Framework integrated software system with an enhanced version that reportedly provides improved ease-of-use features for computing novices and increased performance for power users.

Framework II, priced at \$695, made its debut during a Sept. 10 press conference, where Ashton-Tate's Publishing Group simultaneously introduced two members of its Decision Maker series of integrated software support programs.

The two modules include Project Analysis, which helps managers to prepare conceptually for upcoming jobs and to allocate available resources; and Decision Modeling, which allows executives to identify and assess competing alternatives.

Both members of the Decision Maker series reportedly complement the capabilities of Framework II, which consists of two main parts — a spreadsheet and a word processor. The halves, which are tightly integrated to permit each to exchange data with the other, are said to boast improvements over their Framework I predecessors.

On the spreadsheet side, Ashton-Tate has revamped Framework II to perform financial calculations twice as fast as its original integrated software system, according to the product's chief architect, Robert Carr. The vendor has also reportedly doubled the efficiency with which a microcomputer-resident spreadsheet uses its available random-access memory (RAM).

On the word processing side, meanwhile, Ashton-Tate has upgraded the latest version of its integrated software system with the addition of an 80,000-word spelling checker, which works equally with Framework II's spreadsheet.

Supporting the product's two primary software modules are a number of ancillary capabilities, including telecommunications, graphics and data base management, all of which are reportedly integrated with the rest of the system.

Framework II is configured to accept Ashton-Tate Dbase III and Dbase II applications automatically, and other custom applications may be installed into its pull-down menus, the firm said.

Like the year-old integrated software system it replaces, Framework II runs on IBM or "100% IBM-compatible" personal computers, according to Ashton-Tate President Edward Esber Jr. Framework II requires 384K bytes of RAM plus at least two 360K-byte floppy disk units and becomes available for shipment at the end of next month.

Through year's end, users can upgrade from Framework I to II for \$140. The two Decision Maker series packages, meanwhile, each sell for a suggested retail price of \$69.95.

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Signal bows, 1-2-3 upgrade policy out

CAMBRIDGE, Mass. — Almost five months after announcing an enhanced version of its best-selling 1-2-3 productivity package, Lotus Development Corp. last week released information on its upgrade policy. As expected, separate arrangements will be available next month for corporate and single-user customers.

Separately, Lotus unveiled Signal, a \$595 hardware/software combination that delivers and analyzes financial market data for personal computer users.

Upgrade kits for 99 or fewer copies of 1-2-3 Release 2 will be priced at \$150 each, Lotus said. In 100- to 1,000-unit quantities, upgrades will cost \$125 each, with the price dropping to \$100 each for larger orders.

Lotus sales representatives will coordinate volume upgrades directly with corporate customers, the vendor said. These customers may submit purchase orders directly to Lotus and will not be required to return the original 1-2-3 disks as long as they agree to destroy them.

The vendor will mail upgrade announcement kits to individual registered users next month. Users who do not receive these kits should register for them by returning their warranty cards to Lotus. Individual users must return their system and utility diskettes to get the upgrade. All users who purchased 1-2-3 after April 23 may receive the new release for free, Lotus reiterated.

The Signal product will receive real-time market quotations broadcast via FM sideband transmission and analyze the data on a personal computer using 1-2-3 or Lotus' Symphony software.

Users will pay Lotus monthly fees, with a base fee of \$80 plus \$20 per exchange. They will also pay exchange access charges, said Alexander Crosett, marketing manager for Lotus' Information Services Division.

Typical users are likely to pay \$125 a month and more, he estimated.

Signal is scheduled to be available the first week of October in 12 major metropolitan markets.

NEWS

Reagan bans high-tech sales to South African agencies

Apartheid-enforcing groups targeted

By Mitch Betts

WASHINGTON, D.C. — President Reagan issued an executive order last week banning all U.S. exports of computer hardware and software to certain agencies of the South African government that administer its apartheid system.

In an apparent response to bipartisan support in the U.S. Congress for economic sanctions against South Africa, the president reversed his earlier opposition to sanctions and issued Executive Order 12532. The move at

least temporarily kept the U.S. Senate from voting on legislation containing a computer ban and other sanctions [CW, Aug. 12].

Concerning computer technology sales, the executive order used language similar to that used in Congress' Anti-Apartheid Act of 1985. The order stated that, effective Oct. 11, the following transactions are prohibited: "All exports of computers, computer software or goods or technology intended to service computers to or for use by any of the following entities of the government of South Africa."

The order listed the affected agencies as the military, the police, the prison system, the national security

and weapons research agencies, the administering authorities for the black passbook and similar controls and any other apartheid-enforcing agencies.

Trade statutes act as legal basis

The legal basis for the order was a set of emergency trade statutes that permit the president to declare a national emergency and to issue trade sanctions. The order said the action was justified because "the policy and practice of apartheid are repugnant to the moral and political values of democratic and free societies," run counter to U.S. policies and endanger U.S. interests in South Africa.

Reagan's order also authorized the

U.S. Secretary of Commerce to issue regulations that would be necessary to carry out the computer ban and to implement a system of end-use verification to ensure that any computers exported directly or indirectly to South Africa will not be used by any apartheid-enforcing agency.

The Computer and Business Equipment Manufacturers Association (Cbema), the trade group for the U.S. computer industry, announced that it will cooperate fully with the president's order.

"Our industry has long cooperated with the 1979 ban on computer sales to apartheid-enforcing agencies," said Vico E. Henriques, president of Cbema, referring to a weaker provision in the Export Administration Act. "We join all fair-minded Americans in our condemnation of South African racial policies," Henriques said.

Cbema supports a ban on sales to apartheid-enforcing agencies but opposes broader prohibitions against all computer sales in South Africa [CW, June 17].

Computers used to track blacks

Congress' rationale for a computer ban was that South African agencies use computers to monitor and track blacks throughout their lives to enforce racial segregation and to identify blacks living in white areas illegally, according to U.S. Rep. Howard L. Berman (D-Calif.).

From the age of 16, all blacks in South Africa must carry passbooks indicating where they have permission to live and work, Berman explained in recent congressional testimony.

The South African government maintains extensive computerized records on all blacks — their birthplaces, employment histories, family members, residences — and this information is periodically checked against the blacks' passbooks, he said.

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NEWS

U.S. military to automate weapons manuals, drawings

Long-range program could create paperless Pentagon

By Mitch Betts

WASHINGTON, D.C. — A U.S. Navy official last week disclosed that the U.S. military, in cooperation with defense contractors, plans to computerize fully its weapons manuals and technical drawings.

Ultimately, the long-range automation program could create a virtually paperless Pentagon weapons operation. Technical data from the manufacturers' computer-aided design and manufacturing (CAD/CAM) systems could be fed into a central data base stored on optical disks, ready for easy updating and on-demand printing of operation and maintenance manuals and drawings.

Speaking at a special Federal Computer Conference session, William Gorham, staff engineer at the Naval Supply Systems Command, outlined the ambitious program, called Computer-Aided Logistics Support (Cals).

The Cals program was sparked by paperwork problems at the Department of Defense weapons

support offices, including out-of-date manuals, incomplete and illegible engineering drawings and repositories of manuals that are "voluminous, redundant and excessive," Gorham said. With President Reagan's arms buildup, he said, "We are becoming inundated with paper and microfilm."

Furthermore, scandals about overpriced spare parts for weapons systems have pointed out that the Pentagon needs to retain even more technical data so it can encourage more competition for spare-parts contracts, Gorham said.

Recognizing these growing problems, the Pentagon and defense contractors last year conducted a six-month joint study on automating technical data about weapons systems, using the contractors' CAD/CAM systems.

Gorham predicted that the Cals program will be endorsed officially by Deputy Secretary of Defense William H. Taft IV sometime in the future.

Bradford Smith, chief of the manufacturing systems group at the National Bureau of Standards (NBS), said the Cals program "will change the way DOD does business, and by extrapolation, may affect all other government agencies."

Gorham said the key to the Cals effort will be the incorporation of data exchange and graphics

exchange standards in CAD/CAM and other computer systems involved, with the help of the NBS. Pilot demonstrations in each military service are planned for the 1986-89 period to demonstrate the feasibility of the program, he said.

The transition to the fully automated system will require three phases, Gorham said, with each phase moving toward the goal of a single data base with a data dictionary.

The first phase will include the digital automation of specific types of logistics items, such as engineering drawings, operations manuals and training documents. The second phase will require consolidation of these digitized products into three major data bases, using local-area networks that link the manufacturers with the military document repositories.

Gorham said the third phase will further consolidate the data bases into a single data base that has fully interchangeable data elements and single-point updating with the help of a standard data dictionary.

The forthcoming Pentagon policy statement will officially launch the Cals program by requiring each military service to designate a major weapons system for the pilot program, Gorham said.

Oracle releases DBMS security audit features

By Mitch Betts

WASHINGTON, D.C. — Oracle Corp. of Menlo Park, Calif., announced at the Federal Computer Conference last week that the new release of its Oracle data base management system software will include a security audit facility for commercial and government users.

The software feature, part of the forthcoming Oracle Version 5 DBMS, was urgently requested by military intelligence agencies seeking the ability to conduct retrospective audits of user attempts to access data bases, according to Ken Cohen, the product marketing director.

The facility provides an audit trail of the user name and identification, use or attempted use and logins and attempted logins, Cohen said. Consequently, a data base administrator or security officer can use Oracle's version of the IBM-developed SQL to produce periodic audit reports or to answer ad hoc queries about data base access, he said.

Cohen said the security facility was developed in cooperation with a U.S. Navy intelligence agency and apparently meets the audit requirements of the government's Trusted Computer System Evaluation Criteria document [CW, Sept. 17, 1984].

Oracle also announced that it will enhance the DBMS to permit administrators to restrict user access to data files based on the specific terminal from which access is attempted.

Both security enhancements will be included in the forthcoming Version 5 at no extra charge to current Oracle customers, according to Cohen.

He added that the security facilities will be released Oct. 10 for Digital Equipment Corp. VAX minicomputers and thereafter will be ported to a wide variety of hardware and operating systems, including IBM mainframes and microcomputers.

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NEWS

Encore Computer ushers in Multimax supermini line

By Mitch Betts

WASHINGTON, D.C. — Encore Computer Corp. chose the Federal Computer Conference held last week to introduce formally its Multimax line of general-purpose supermini-computers and related products.

In other efforts to appeal to computer buyers in the U.S. government, Encore officials said the firm's products will use existing government communications protocols and standards in its products and will place its eastern U.S. sales and operations headquarters in Greenbelt, Md.

Encore officials touted the Multimax as the first commercial product to permit as many as 20 main processors to share a common memory in a high-performance environment.

"With 20 processors installed, we have observed 98% of the ideal, aggregate performance on memory-intensive tests, even with I/O traffic," said Russell L. Moore, vice-president of hardware development, who added that the architecture will facilitate parallel processing.

Officials of Marlboro, Mass.-based Encore said Multimax performance is from 1.5 million instructions per second (Mips) to 15 Mips, in 1.5-Mips increments. Memory capacity is from 4M to 32M bytes, and the system contains from one to 10 I/O channels. The 32-bit multiprocessor is organized around the Nanobus, the firm's own high-speed proprietary bus.

System prices begin at \$112,000

for a dual processor, 1.5-Mips system with 4M bytes of shared memory, one I/O channel, one 515M-byte disk drive, one 6.3K bit/in. ½-in. tape drive and one workstation or console printer. A large system configured for parallel processing applications, with 20 processors operating at 15 Mips, 32M bytes of memory and the same peripherals, costs \$340,000.

The prices for both configurations include a new multiprocessor operating system based on AT&T's Unix, program development tools and a C compiler, the vendor said.

First customer shipments are planned for October and November, officials said.

The announcement also included

the introduction of the following products:

■ The Umax 4.2 multiprocessing operating environment, Encore's version of Unix 4.2 BSD with parallel and distributed processing extensions, is used as the operating system for the Multimax superminis. Officials said the design allows all processors concurrent access to system data structures.

■ The Host Station family of displays and workstations, Models 100, 110 and 550, are priced at \$3,495, \$3,795 and \$14,000, respectively, in single-unit quantities. The Host Station 100, introduced in April, offers high-resolution graphics, and the 110 adds downloading capability for cus-

tom bit-mapped fonts for the computer-aided publishing market. The Host Station 550 has an additional 32-bit processor for interactive applications requiring local computational power and operates under the Umax operating system.

■ The Annex network communications computer is said to be a 32-bit subsystem for connecting up to 16 high-speed, 38.4K bit/sec. serial ports to local-area networks. The vendor said it provides networking and I/O processing for peripheral communications, thus freeing shared computers for user tasks. The Annex family has two models, the \$6,000 UX terminal server and the \$8,000 MX Multimax I/O processor.

Dema meet eyes data center productivity

By Mitch Betts

WASHINGTON, D.C. — Much of the talk last week at the Data Entry Management Association's (Dema) ninth annual conference focused on the search for methods to increase the productivity at data centers.

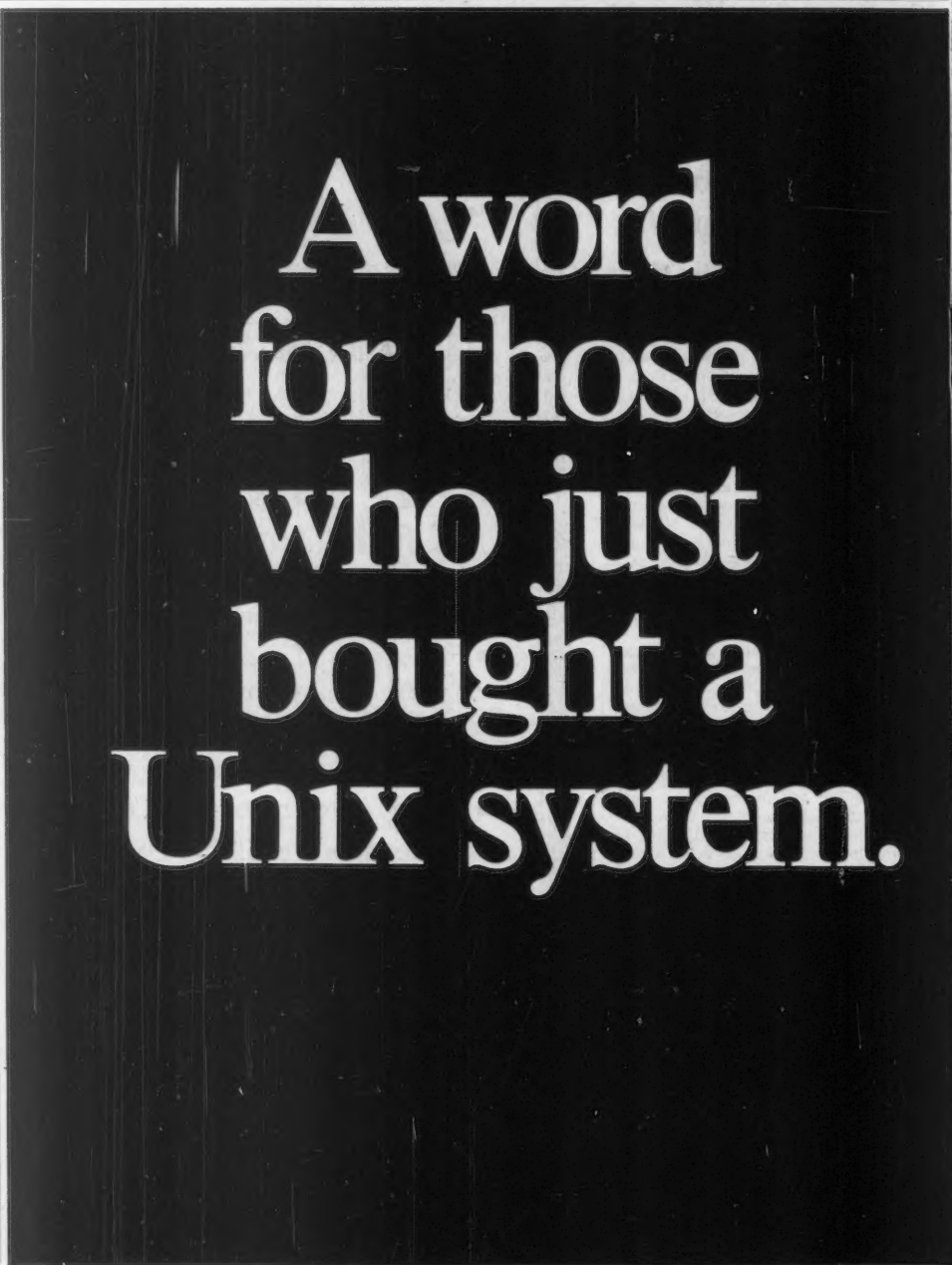
Carol Ann Meares, acting director of the U.S. Department of Commerce's productivity center, said U.S. companies need to have strong productivity improvement strategies to compete in the international marketplace. She said productivity improvement is an ongoing, multifaceted process — not a single program — that must have visible support from top management.

"For example, make [productivity] improvement a regular discussion topic at staff meetings. Some organizations establish a high-level steering committee to guide and review improvement efforts," Meares said.

Meares also urged managers to communicate plainly their plans to prevent a rash of negative rumors that management wants a "work speedup." She said management should encourage workers to participate in making the decisions about productivity improvement and should stress the benefits for employees.

"Employees are going to ask, 'What's in it for me?' Continue to point out how they will benefit —

Continued on page 15



A word
for those
who just
bought a
Unix system.

NEWS

Bell Atlantic readies ISDN for 1987 availability

By Bryan Wilkins

WASHINGTON, D.C. — Bell Atlantic Corp. last week unveiled its version of an Integrated Services Digital Network (ISDN) and disclosed its plans to make the service available to businesses in 1987 if business conditions warrant it.

The ISDN demonstration, centered on the regional holding company's primary central office switch in the nation's capital, made use of the company's existing Centrex service, which Bell Atlantic is vigorously trying to revive in the face of contract expirations by many U.S. agencies.

ISDN is the ability of the telephone network to permit users to perform telephone voice communica-

tions, data transmission from terminals and from computers to terminals, videoconferencing and facsimile transmission simultaneously and to serve as an electronic mail messaging system.

Digital switches essential

Permitting these types of simultaneous functions on the telephone network is essentially made possible through the installation of stored, program-controlled digital switches, devices that both local exchange telephone companies and long-distance carriers are putting in place despite the obstacles presented by the different interfaces in various vendors' equipment attached to the network.

Resolving standards issues to permit universal interface to an ISDN network will be critical to the pace of introduction and acceptance by customers, said Richard Eichorn, Bell Atlantic's assistant vice-president for product line management.

The Bell Atlantic demonstration connected four terminals, two of which were new integrated voice/data terminals manufactured by NEC America, Inc. Communications by voice and data simultaneously over the same line were carried on as well as facsimile machine transmission.

The Bell Atlantic demonstration permitting dissimilar terminals to carry on voice, data and facsimile communications simultaneously is

dependent on a so-called terminal adapter located at the user's desk, which converts the protocols of each unit into standard language for transmission over Bell Atlantic's lines.

Ultimately, these protocol converters would be incorporated into vendors' equipment, Eichorn said.

An ongoing standard issue that is still to be resolved in the U.S. is whether to adopt the network interface system that has been adopted by most European countries that have established a universal interface to ISDN for equipment. In the U.S., some vendors are holding out for the interface to the ISDN network to take place at the telephone company switch where the protocol conversion would be performed.

Bell Atlantic last week said it supported the adoption of the European "T" standard interface. "It's impossible to overstate the importance of establishing one uniform set of standards for ISDN," said Roger Nucho, Bell Atlantic's staff manager for network architecture and standards.

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From page 14

Dema meet eyes data center productivity

less frustration and fewer problems, improved working environment, more satisfying work, feelings of accomplishment, recognition and a better chance for raises in the future," Meares said.

She noted that there is a large amount of helpful information on productivity available from the government, productivity research centers, trade associations and trade newspapers. Meares said the Commerce Productivity Center in Washington, D.C., is a clearinghouse for such information.

Paul Banks, DP manager for Mitchell, Silberg & Knapp in Los Angeles, reported that an effective incentive pay program for data entry workers can increase productivity by 45%, as well as improve employee morale. He defined incentive pay as "compensation aimed at increasing production and encouraging progress toward company goals."

"It has been my experience that an incentive system can provide a significant return on investment — four to one or higher — for shops with 20 or more operators, based on wage costs alone," Banks said. He recommended that an incentive program be considered for data entry offices with more than six operators.

Increasing production rates is best accomplished when goals are understood, mutually acceptable to management and operators and supported by statistical information, added Frances Arakawa, manager of the data entry department at Combined International Corp. in Chicago.

Barbara A. Bradley, data entry consultant at Springs Industries, Inc. in Lancaster, S.C., stressed the importance of accurate job descriptions, rewarding career paths, fair performance standards and regular performance appraisals for data entry operators. These management practices encourage initiative and a sense of responsibility among employees, she said, and are strong motivational forces.

EDITORIAL

Computers and South Africa

The turmoil surrounding contemporary South Africa has spilled over into the computer community, both here and in Pretoria. *Computerworld* interviews in last week's issue reported that members of the South African computer community decried U.S. efforts to restrict sales of computers to those agencies administering the system of apartheid, labeling such action as restrictive and punitive.

The day after publication of these comments, President Reagan officially imposed computer sales sanctions against South African government security agencies. The Executive Order, in effect, superimposed the stamp of White House decree on moves that many U.S. computer manufacturers have already taken voluntarily.

No one seriously presumes, however, that the actions of President Reagan will have appreciable effect on the workings of the South African government. The real point of the U.S. sanctions is to add to the pressure building on the South African government to institute reforms, and any move in this direction must be viewed as positive.

There is another issue involved, one that speaks to the central involvement of computer usage in this dispute. To our knowledge, this is the first time that the matter of moral effect has been applied to computer manufacturing: Do the people who produce machines that are used in the pursuit of morally objectionable ends share responsibility for the ultimate effect with the people who actually use them?

Whether or not this is the first time this issue has been touched upon in international political debate, we are certain that it will not be the last time. As computer technology comes to play an increasingly greater role in the implementation of controversial defense, security and social policies within the U.S. and among its allies, computer manufacturers, their officers, employees and investors can expect to be confronted time and again by opponents of these policies seeking to accrue public support.

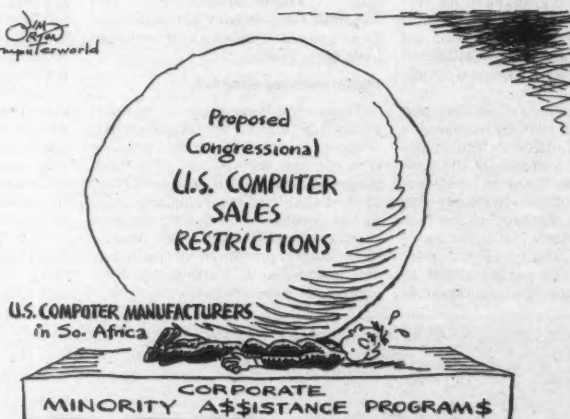
The U.S. computer community must begin to think through the implications of this issue and be prepared to deal with its ramifications. On the specific matter of computer sales to the South African government, we believe that the U.S. computer industry has thus far acted responsibly. Now that it has become a participant — albeit unwilling — in this political struggle, more voices must be raised in this deeply important matter. There is room for debate about the motivation for and the effect of sanctions such as these now imposed by the Reagan administration. There is no room for debate over the goal.

We join all of those who denounce insitutional racism as practiced by the government of South Africa.

Notes & comments

Before it recedes too far into the past, we must make mention of *Playboy* magazine's annual "Back to Campus" guide (September 1985), and the entry under the heading of The Hot Major. It read, "Ask anyone: The hottest field for the Eighties is computer science." Does this mean no more jokes about nerds in white socks toting slide rules? We'll see. Meanwhile, our congratulations to our readers for their wisdom and foresight.

Jim
Rife
Computerworld



Between a rock and a hard place

LETTERS

Government certification suggested

In the Reader's Platform "Certification: A gauge for computer professionalism?" [CW, July 22], the author implied some sort of national recognition for the certificates awarded by the Institute for the Certification of Computer Professionals (ICCP). Unfortunately, no such recognition exists, although the ICCP would like to believe that it does.

Achieving national certification is indeed something for which we should all strive. However, certification must be taken out of the hands of the ICCP and properly placed with the federal or state governments just as it is for attorneys and doctors.

Up to this point, I am not sure how much influence ICCP certification would have played in my hiring practices except to tell me that the candi-

dates were able to guess correctly at a number of inscrutable questions on a five-hour test. It would certainly not have contributed to their professional, ethical or legal postures.

Peter Adams
Clifton, N.J.

For more letters, turn to page 23

Computerworld welcomes letters from its readers. Preference will be given to typed, double-spaced letters of 150 words or fewer. Letters may be edited for the purposes of clarity and brevity. Letters should be addressed to Editor, *Computerworld*, Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

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VIEWPOINT

Avoiding security disasters



MANAGEMENT MATRIX

Walter F. Cuirle

"Suppose," the riddler asked, "that a flood was coming. What would you do?"

"Go up to the roof," was the answer.

"Now suppose that you knew a tornado was coming. How do you prepare for that?"

"Hide in the basement, I guess."

"But what if you prepared for the tornado, and a flood came instead? What would you do then?"

While you consider the answer to that, consider the similar problem with security in information systems. It's a matter not only of how well you prepare but also for which threat you prepare.

There have been a lot of tornado warnings in recent years. We are given images of swashbuckling juveniles baffling old pros and getting book contracts for their escapades, reports of gallant attorneys with the words "computer law" on their business cards leaping to the defense, speeches by politicians rising to the challenge with bills that could well be infringements of civil liberties. Everybody into the cellar.

Although vandals with their electronic spray cans do pose somewhat of a threat to your system, they are more of a tempest in a teapot than a full-blown tornado. Given the funds, it is easy to protect yourself. The real problem is not the juvenile genius but the poorly informed financial executive who could not see the wisdom of a callback system on the corporate computer and deleted that budget item once too often.

Think about it for a moment. If you had all the requisite technology in place, who could possibly defeat a callback system? Who could change a telephone number in a secure file without leaving a

trace? Who could know the key to an encrypted file? Someone on the inside, that's who.

Here lies paranoia. Security based on universal suspicion views information as a kind of intellectual crown jewel. That begets a lockup mentality, conjuring up images of cops and robbers, guards and guns.

There are two problems with the lockup approach. One is that it puts the complete responsibility for security in the hands of a separate group that can't help but be always one step behind the group that creates the thing protected. The other

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Who could change a telephone number in a secure file without leaving a trace? Someone on the inside, that's who.

problem is that, since the whole setup is all stick and no carrot, there will be a natural tendency for the programming staff to view security as a nuisance, a clumsy obstacle to be circumvented. The more the staff views it that way, the more expensive, complex and ineffective the security system becomes.

Even when the security procedures are followed to the letter, they may not work. There is a story about a systems operator for a lockup installation who reported a problem with a disk drive and called in a service technician. The tech said that the drive would have to "go back to the shop" and trundled it out to the door. Following official published procedures, the guard checked the tech's name, identification, time of arrival and departure. He took the trouble to log the serial number of the drive and obtain authorized signatures on a fistful of forms before passing the tech and the

unit out the door. Nobody had said anything about checking for a disk pack in the drive, so 300M bytes of confidential files went out the door too.

Information can't really be locked away like a valuable jewel. So who shall guard the guardians? To a great extent, the information systems staff must guard itself. Because your systems professionals are the best qualified to breach security, scary as that idea is, they are the best qualified to maintain it.

You can do it in three steps: Set up a system with a minimum number of rules; write the rules so that it is easier to follow them than to break them; enforce the rules positively so that people will want to follow them for reasons other than fear of punishment.

To minimize the number of rules, it's essential to establish a group identity. Behavior is governed more by a sense of what it means to be a good member of the group. One way to establish this is to publicize, within the group, instances where security might have been compromised but was not because of someone's sensible actions. It takes some thought to come up with rules that are easier to follow than to break, but you can do it. Let's suppose that you require passwords to be changed monthly. You can double-check and harass and remind to get it done, or you can simply modify the system so that access is denied to users with passwords more than a month old.

Positive reinforcement is more effective than negative, and enforcement within the group is likely to be more effective than enforcement from the outside. One possibility is a reward for those with unblemished security records over some period. The reward could be cash or time off. Whatever it is, make it significant. Consider the expense of the alternatives before you consider the expense of the reward.

Tornados are capricious things, but floods are predictable. If everybody works together to put in flood control ahead of time, then everyone can be safe from either in the basement. Security is everybody's business.

Cuirle is a senior associate with Nicholas DeMaio Associates in Bryn Mawr, Pa.

Alternative approaches for successful prototyping



QUALITY

Wayne Smith

Too frequently, the traditionally casual development group may try to excuse its ad hoc approach to software development by claiming to be doing prototyping but with little understanding of the critical prerequisites for a successful prototyping project. When we examine the prototyping issue in depth, we see that a key point of confusion lies in the term itself. Actually, there are two distinct types of prototyping.

One is known as requirements prototyping. This approach can be helpful during rapidly changing market or business conditions or during the establishment of a new business function or department. A prototype is used to approximate an initial solution to the problem quickly, say, in one to three months.

The user operates it for a period of

time, analyzes feedback and makes refinements, and the process continues until a stable set of business requirements can be established. Then the prototype is discarded, and a more conventional development process is initiated using the results of the requirements prototyping process as the actual specification. In this case, prototyping is a tool that is used for requirements analysis, leaving the remainder of the application development process intact.

The second type of prototyping is known as evolutionary development. This approach is also characterized by an initial approximation of the problem, but the prototype becomes the nucleus of the evolving system. Each evolutionary cycle adds more features. In this case, prototyping becomes a replacement for the entire development process.

The salient feature of either prototyping approach is that a tangible model or prototype is used as a feedback mechanism to help define the final system solution.

All too frequently, an organization may find that prototyping, an apparently productive tool, may lead to the wrong system, to a system that falls short of user expectations or to cost overruns and schedule delays. Proto-

typing failures are usually caused by one or more of the following problems:

- Not selecting the correct prototyping mode, that is, requirements or evolutionary.
- Not having the proper technical environment to support the prototyping process.
- Not having a sufficiently accommodating user. This is particularly a problem for the evolutionary development mode.
- Not having an appropriate business problem. This is almost exclusively a problem of the evolutionary development mode of prototyping.

Examining the problem categories

Let's examine each of the problem categories separately. Selecting the wrong approach stems from an MIS misunderstanding of the basic motivation for the particular development effort itself.

The requirements prototyping approach should be used when no conventional or alternative technique for requirements analysis can satisfactorily identify and validate the true business requirements.

The evolutionary development prototyping approach, on the other hand, recognizes the inherent failure

of the organization and its methodologies to manage change. In other words, the evolutionary development mode of prototyping results in change via the product rather than the process.

Technical environment requirements

The second problem category concerns the technical environment within which the prototyping process is to be carried out. There is much confusion about the use of fourth-generation languages and other higher order languages as prototyping tools.

In fact, prototyping does require a fairly elaborate technical environment to be successful. An integrated and active data dictionary and directory system is often vital. An integrated data base or file management system is also important. A set of on-line development and validation functions — for example, code development and regression testing — is very helpful, if not required.

Finally, a simple control and release control mechanism can be crucial to administer the many evolutionary refinements. It can also be used to help deliver the system and its variations to the end user.

Continued on page 23

Smith is vice-president, specializing in quality, at Applied Information Development, Inc. in Oak Brook, Ill.

VIEWPOINT

Blazing trails the Natural way: fourth-generation tools



READER'S PLATFORM
Daniel A. Nolan

Languages are the tools used to make computers work. Fourth-generation languages are simply the product of successive refinement of these tools. The benefit that can be derived from these languages is as great as the benefit of the missile over the spear or the steam shovel over the spade.

The outstanding example of this is Software AG's Natural, used with or without the Adabas data base management system.

With this language, systems are delivered in a fraction of the time than it takes with Cobol. Systems produced this way will operate with far greater efficiency than with Cobol.

Mathematical advantage

Mathematically, the advantage of Natural over Cobol is 400 to 1. Practically, this can never be achieved. Developers that attempt to do so immediately find themselves programming systems faster than end users can review progress and formulate specifications. What the industry really needs is recognition that fourth-generation languages and relational data base management systems exist.

Using the previously mentioned Natural language as an example, we can better put into perspective the current state of fourth-generation languages as follows:

- Application generators do, in fact, exist. What is lacking is the generation of design and specification, hampered by the muddled definition process introduced in the 1960s to reduce the expense of errors.

- Rather than attempt to eliminate the errors, we have reduced the cost of a mistake to near zero and the time it takes to discover that mistake to instantly. This way, all errors can be detected and corrected before the customer ever sees them.

- Information generators are sim-

ply application generators with an intelligent person operating the terminal. The attitude that "We have done so much with so little for so long that we can do anything with nothing at all" is giving way to "We may have all the answers, but what we don't have are any of the questions."

- Prototype construction is being done now and should be addressed in the present, not future, tense. Entire firms specialize in this, and those organizations that have tried modeling continue to do so. That a prototype is only a working model should not be a limitation: If it works, it should be used. The definition of the final prototype is probably that it is sound enough to serve as the basis for the eventual system.

- Screen mappers are commonly available now, with the not-so-surprising result that other tools have demonstrated. In the proper hands, they can be of some use. Like other tools, used inappropriately, they can botch up any job, no matter how simple or complicated.

- Specification generators are more than word processing packages specific to the data processing industry. The choice of name appears to be unfortunate: What is truly needed are specifications or standards that recognize the power of these fourth-generation tools. The name "generator" implies artificial intelligence.

- Natural is a nonprocedural language, as described. Using Cobol terms, there is no file division or no working storage division, there are only procedures. Simple mathematics shows this reduces a programming task by 75%.

Beyond that savings, there are no instructions needed to open a file, manipulate a device or direct logic. The entire program is only concerned with the task at hand.

- Decision support languages are probably a cruel promise. The active data dictionary in the DBMS, used properly, will assign commonly used names to data. In the hands of professionals, systems developed for users will support any decision.

So far, no responsible head of a corporation has either taken the time to do this or has relinquished this task to a computer product more than once.

- Query languages abound. One of the primary objectives of Codasyl was that all functions could be controlled by a single language. Experience has shown that to be true. We need another computer language like we need another form of electricity.

On the other hand, many firms have sprung up that provide access to data in the customer's terms to give them ready access to the information that is lurking in the computer. Software AG's Natural and Adabas alone have accounted for a number of firms providing such services.

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Nolan is president of Heuristic Developments, Inc., a DBMS software development firm based in Annandale, Va.



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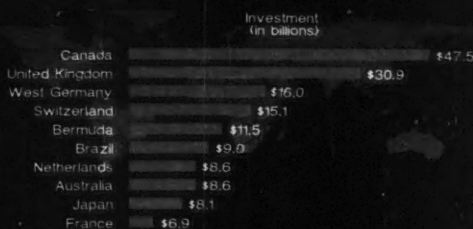


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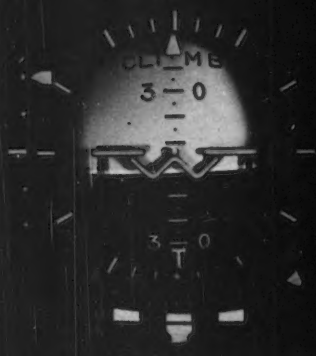
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VIEWPOINT



LETTERS

U.S. gives poor show

In reference to Charles P. Lecht's article "Resting on the laurels of American technology" [CW, July 22], I completely agree with him.

I recently returned from a visit to Japan. I attended Tsukuba Expo '85, which is a grand exposition, but the U.S. exhibit was a wasteland within the midst of it. Although there were some high-technology displays, there was no cohesiveness to the U.S. pavilion.

The obscure film shown at the exhibit was received so poorly by the Japanese observers that many left before it was finished.

By contrast, the IBM Japan pavilion was outstanding. It managed to convey the image of a company on the cutting edge of technology while involving attendees in that image.

I don't know if Lecht has attended other U.S. exhibits at other expositions, but I have. The U.S. traditionally has poor displays.

It is a shame that we did no better at Tsukuba Expo '85 because we are just maintaining our already shabby reputation.

Fortunately, when it comes to delivering high-technology products, we do much better.

John Burkey

Code prediction made

I have just read a prediction in the article, "Programming teams: On the way out?" [CW, July 29] that "we are headed to where the robots manufacture software."

It reminds me of a prediction widely made in 1953, when I first joined the profession, that automatic programming would make programmers obsolete. This was about the time the first higher level language was introduced — assembly language coding.

Of course there have been

many similar predictions since then. Let me make one: within 10 years someone will predict the existence of a fifth-generation language that automates the production of code.

A. C. Henrickson
Chevy Chase, Md.

X.25 recommended

The article "IBM research center: Commitment to net standards" [CW, July 29] stated that X.25 is a CCITT standard that has been incorporated into Open Systems Interconnect (OSI). Later the article stated that "OSI in no way ensures that networks will work together. . . . OSI is a skeleton. There is no software. The software is still related to the operating system of each vendor."

OSI may be a skeleton, but the CCITT recommendation of X.25 has flesh and blood. X.25 is a complete and detailed recommendation for implementation of OSI layers one through three. Conformance to CCITT X.25 does ensure that networks will

work together.

That is evident by the availability of worldwide communications to anyone running X.25, regardless of the operating system of the vendor. As a provider of portable X.25, I find the statement "there is no software" misleading.

Donald Berryman
Edina, Minn.

Reader lauds section

I have worked with a number of publications regarding coverage of the computer printer marketplace. Unfor-

tunately, I have often found that these articles rarely contain the focused depth and objectivity necessary to be fresh and instructive.

Computerworld's Update on printers, "The paper chase: Trends in printer technologies" [CW, Aug. 5], was a welcome piece of reporting on this confusing multi-billion-dollar marketplace.

I commend CW's commitment to high quality and depth in the new Update format. I compliment your Update Editor, Glenn Rifkin, on a job well done.

Maureen McManus
Marshfield, Mass.

From page 17

Prototyping approaches

The third category of prototyping problems — those associated with unrealistic user expectations — is especially troubling.

Many users have become accustomed to application systems that operate at high-performance levels, have advanced features for ease of use and are intended to be a total system.

None of these are likely characteristics of a prototype nor do they tend to emerge as the prototyping process advances. Feature lists will increase as the prototype ages but at the expense of architecture, conceptual integrity and overall soundness.

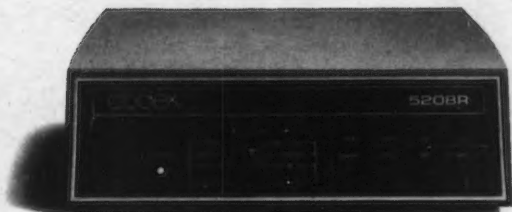
The final category of prototyping problems deals with the nature of the application itself. Generally, although requirement prototyping is applicable to most applications, evolutionary development is best suited for the back-end processes. These

are characterized by having an existing data base and reporting architecture. Conversely, evolutionary development is generally not suited to high-performance, highly complex, highly integrated transaction or event-driven processes.

Both types of prototyping can be clear winners if properly conditioned. The challenge to the MIS community is to fill the vacuum created by the lack of any effective prototyping management methods.

It is not acceptable to conclude that because the development process changes radically either the same management methods that we use for the more prescriptive and formal approaches will suffice or that we do not need any management because it will just get in the way.

Let's not allow prototyping to continue to be a crutch that props up and supports the old methods but rather a window through which we can see a better applications development process.



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NEWS

House report recommends no federal VDT regulation

By Mitch Betts

WASHINGTON, D.C. — The staff of the U.S. House of Representatives Subcommittee on Health and Safety recommended against government regulation of VDTs in the workplace. Included with that recommendation, in a new report on VDTs and health, was a call for more scientific studies of the effects of extra-low and very-low frequency radiation.

"Although current scientific knowledge suggests that there are no adverse health effects from these low and extra-low frequency radio waves, further study and research in this area could eliminate, and definitely reduce, any lingering doubts," the report concluded.

The staff report — based on a series of hearings in 1984 — strongly recommended that the research be done by the National Institute for Occupational Safety and Health or by some other scientific testing agency.

The report explained that many electric appliances, including hair dryers and electric typewriter motors, emit low-level radiation in

amounts that often exceed the levels emitted by VDTs.

After reviewing such issues as VDT furniture, room lighting and work breaks to relieve stress, the subcommittee staff concluded that "these ergonomic factors are not the kind that could be legislatively standardized."

"Employers and employees are in the best position to determine what is

best in each individual workplace so as to reduce complaints due primarily to ergonomic factors," it added.

The subcommittee report was immediately praised by the Computer and

Business Equipment Manufacturers Association (Cbema) here.

"The report supports Cbema's long-held position that education, not legislation, is the answer to employee complaints about VDTs," said Vico E. Henriques, Cbema president.

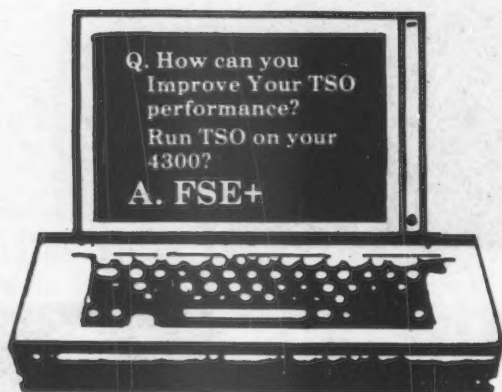
He also supported the idea of more studies, in order to calm public fears about VDT radiation.

"We hope that the tests the subcommittee suggests will put these fears to rest," he said.

"Education, not legislation, is the answer."

— Vico E. Henriques
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WORLD DIGEST
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PARIS — Hewlett-Packard Co., Ing. C. Olivetti & Co. and SMT-Goupil, a French micro maker, are each preparing to launch personal computers that are compatible with the IBM Personal Computer AT, even though the future of the AT in IBM's own strategy remains uncertain. The three new machines might make their appearance during next week's Sicob.

FRANKFURT — Control Data GmbH has announced receipt of a \$3.4 million contract to deliver 5,000 hard disk

drives to NCR GmbH in Augsburg, West Germany, for NCR Corp.'s recently introduced PC 8 personal computer. The PC 8 is compatible with the IBM Personal Computer AT and will probably be on display at the Systems Fair in Munich, West Germany, in late October.

TOKYO — Fujitsu Ltd. announced separate five-year contracts to extend technological assistance to two South Korean makers of personal computers and peripherals.

Under one of the agreements, with Daewoo Telecom Co., Fujitsu will deliver the parts necessary for Daewoo to develop and manufacture displays and keyboards for a Korean language version of Fujitsu's Facom 9450-II personal computer. Under a separate

Continued on page 28

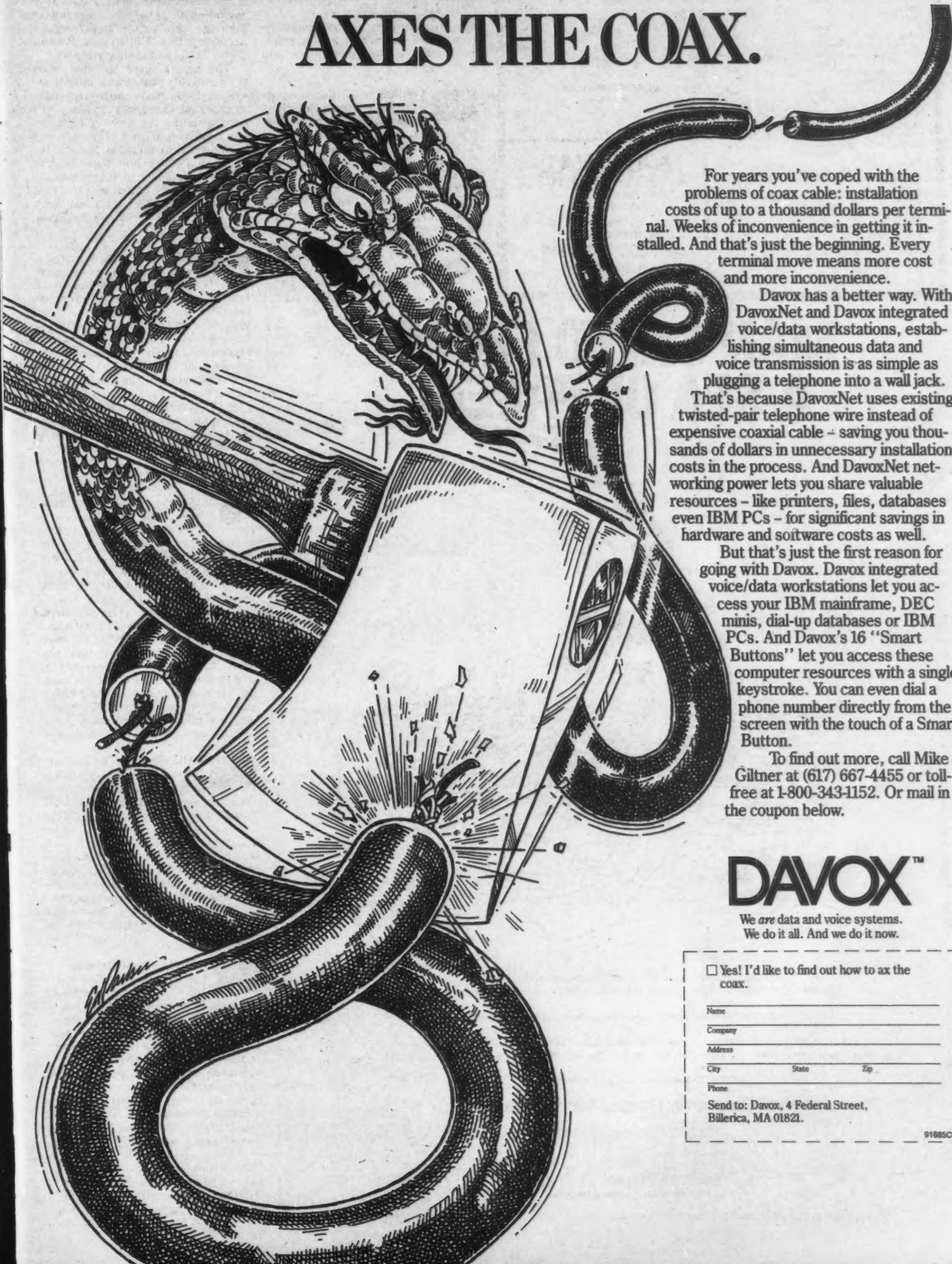


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NEWS

From page 26

World Digest

deal, Jeil Precision Co. will manufacture Korean-alphabet, 24-dot printers with Fujitsu components and technology.

LONDON — British computer firms are facing a lack of skilled DP staff as more foreign companies offer higher salaries than do firms in the UK. Overseas firms annually draw more than 1,500 of the most skilled workers, mostly data base and networking professionals with more than five years' experience, according to the recruitment agency Computer People.

TOKYO — Japan's production of mainframe systems during the first six months

of this year leveled off at a weak 6,223 units, while smaller machines, including personal computers, clinched a stellar production record, according to a Ministry of International Trade and Industry report.

The report noted that the country's monthly mainframe output averaged 1,064 units during the half-year period, the same as in last year's corresponding term. As in 1984, Japan's monthly output of mainframes is expected to increase toward the year's end, the report forecast. The country's personal computer production totaled 967,742 during the first six months of 1985, compared with the 1984 yearly total of 1.5 million, the report said.

PARIS — Cimsa and Sintra, both major manufacturers of military computers in France, are involved in a merger that should finish before the end of the year. The two are subsidiaries of the same group, Thomson-CFS, but had become competitors because of the government's decision to pass Sintra from the hands of the CGE to Thomson-CFS, both nationalized firms, as part of a reshuffling of France's electronics industry last year. Increasing foreign competition and a shrinking number of military contracts began to take a toll in the earnings of both companies.

TOKYO — Nippon Telegraph and Telephone Corp. (NTT) has announced plans to reorganize its five research and development facilities into nine major laboratories. NTT will place a new stress on software production technology, a spokeswoman said.

The reorganization, effective Sept. 12, was intended to "foster close working relationships" between NTT's labs and profit centers, she said. Research by the reorganized labs is done in the areas of basic studies, telecommunications networks, information-communication processing, integrated communications, electronics components and software.

BRUSSELS — The \$30 million initial implementation of a plan by the European Economic Community to develop advanced communications technology has been approved. The first phase will focus on the development of a reference model for a broadband European digital network. In the second phase, the participating companies will concentrate on the development of opto-electronics, broadband switches, software and flat video display screens.

MUNICH, West Germany — Lotus Development Corp.'s 1-2-3 tops the charts of business software in West Germany, with Lotus' Symphony and Ashton-Tate's Framework, two other integrated packages, coming in fourth and sixth on the top-10 list.

According to market research firm International Data Corp. Deutschland, the most popular software packages, behind 1-2-3, are Ashton-Tate's Dbase III, Micropro International Corp.'s Wordstar, Lotus' Symphony, Software Products International's Open Access, Ashton-Tate's Framework, Microsoft Corp.'s Multiplan, Microsoft's Word, IBM's Fibu and Bongartz & Schmidt's Word Ace, the only German product on the list.

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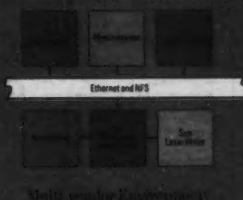
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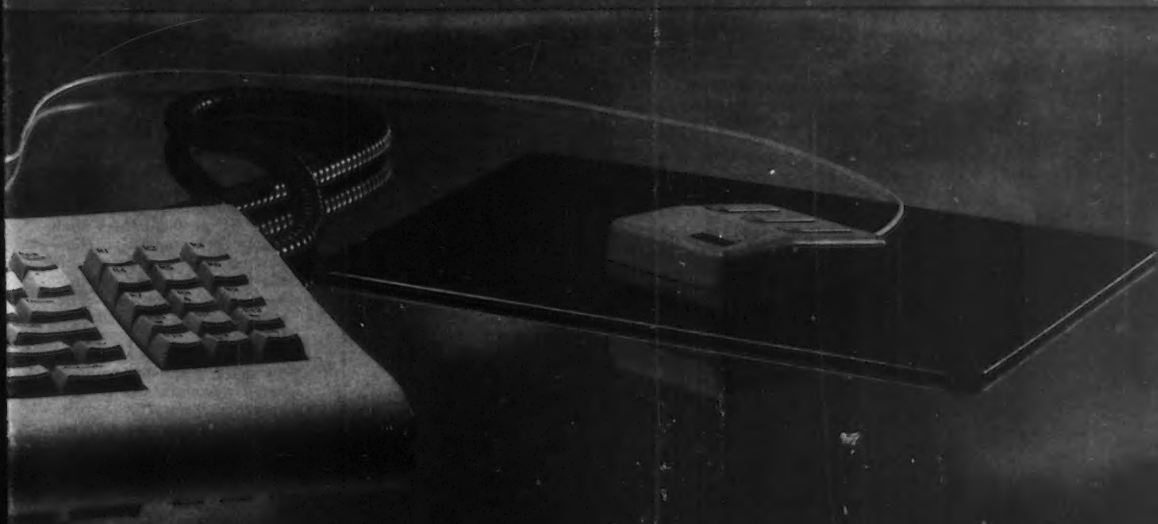
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NEWS

Language tool drives auto parts maker's progress

ST. LOUIS — When Ron Perez joined the data processing department of one of the nation's oldest automotive parts manufacturers, he was confronted by two large binders chock full of application needs — and a system still running partially on card decks.

Perez is manager of system programming for Carter

Automotive Co., a supplier of new and remanufactured components for fuel, cooling, air-conditioning and electrical systems. The company also manufactures fuel and emissions systems components as original equipment.

Two years ago, Perez recalled in a recent interview, Carter suffered from "a tremendous backlog in develop-

ment." Project requests for applications filled two loose-leaf binders, and no one in the department had expertise in command-level CICS programming.

Today, the company's data processing center operates with a staff of seven people and uses an IBM 4341 Group 1 mainframe with 4M bytes of memory. An IBM

3706 handles front-end tasks for communications, while approximately 30 IBM 3278 and 3279 units meet terminal needs.

When Carter was in the market for an order entry system that was to incorporate billing, inventory control and systems analysis, it considered both buying off-the-shelf software and devel-

oping in-house applications using either CICS or a fourth-generation language. The company soon determined a fourth-generation language was the best route.

When selecting the product, Carter's data processing evaluation team set five goals for an application tool: short learning curve, ease of coding, assured file integrity, elimination of on-line downtime and immediate aid for the backlog. After looking at several products, Carter settled on Gener/OL from Panosaphic Systems, Inc. The product was selected because of its ease of programming and a top-down structure that resembled Cobol and Basic, with which most of the programmers were familiar, Perez said.

"Gener/OL has given us the ability to program at least five times faster than with command-level statements. That means we can program in days instead of weeks and weeks instead of months," he said.

According to Perez, programmers with some CICS background were able to begin writing programs after one day of working with the product. Others with only batch programming background learned Gener/OL in two to three days.

End users involved

Carter's programming staff now has an easier time of designing screens that allow the company to involve the end user in the programming process, he said. Data processing staff members do the initial screen design and then invite the end user to the terminal.

In the two years it has used the Gener/OL fourth-generation language, Carter developed a price analysis program that lists prices and part numbers by regions. It also contains a cross-reference of part numbers and prices for competitive companies. "We can determine the effect of a price adjustment on gross profits while still remaining competitive," Perez said.

When Carter management decided it wanted to provide better customer service, the programming staff was given 30 days to come up with an appropriate application. The application gathers daily inventory information from warehouses in Arkansas and Virginia and downloads the information to Vsam files using Gener/OL. Sales people can now take a phone call from a customer and get updated information on the status of a particular part.

In the future, Perez said, the company hopes to connect its purchasing system with the customer service program.

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"Most application software packages
are functionally rich,
The problem is that
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Straight talk about application software packages.

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"Most application software packages are functionally rich. The problem is, that's simply not enough."

While everyone agrees that packaged applications possess great potential to save time and money, you'll hear a lot of people—from MIS directors to operations managers—tell you the ones their companies have implemented fall somewhere short of satisfactory.

Typical limitations include the fact that the packages require such extensive modification that the savings they seemed to offer totally disappear. Another common complaint is that one application package fails to integrate with another. A third shortcoming, and perhaps the most common, is that packaged applications cannot be easily adapted to reflect the changing nature of the business.

You have only to look at the architecture of most of the applications currently in use to understand why these problems exist.

Many companies today depend on applications designed with technology from the 60's and 70's. Some are 2nd generation applications built without any reliance on database architecture. Others are 3rd generation applications that provide only a generalized interface to a database management system; in addition, many application vendors provide a common front end user interface to mask inefficient architecture. The result is that these 3rd generation applications realize only about 10% of the power of a DBMS. *And that's simply not enough.*

Without full use of the facilities of a superior DBMS, users of application software find it extremely difficult to



adapt and extend an application package to their current as well as to their future business needs. And *only* when an application is built with advanced database technology can it provide the sharing of data that leads to functional integration between different application modules.

Ultimately, what's required is software that goes beyond the conventional packaged applications approach.

What's required is 4th generation applications software — software that's rich in functionality, and whose underlying architecture is built on, and takes full advantage of, advanced database technology.

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2. Functionally Integrated

Businesses today demand applications to do more than address individual functions. Businesses today need applications that recognize the interdependencies within an organization—in short, applications that can share data. For example, efficient real-time, four-way matching of invoices with receiving, purchase and inspection documents can only be achieved through true sharing of data, and this sharing of data can only be achieved with an advanced database technology which delivers that integration. Redundancies are eliminated and productivity is increased when all applications dynamically reflect the operations of the organization. By sharing an architecture that provides for optimum use of an organization's information, Cullinet's manufacturing, financial, human resources and banking applications fulfill this need.

3. Easy to Tailor

Although many businesses appear on the surface to operate in a common fashion, each, in fact, is unique. Applications must therefore be built with an optimized set of tools that permits them to be adapted to a company's way of doing business, rather than having the company have to

adapt to accommodate the software. Cullinet applications are designed to accommodate change. They provide the means to personalize screen layouts, capture new information, reformat reports, resequence transactions, and change messages without impacting the entire environment. Only Cullinet's applications can provide this environment for adaptability through their integration with advanced database technology. In this way, Cullinet applications give users the independence to adapt them—quickly and efficiently—to meet the unique requirements of the business.

4. Easy to Extend

As a business changes and grows, so do its needs and requirements. Cullinet provides easy to use, menu-driven facilities that permit functional extension of an application while preserving integration. An end user can quickly react to new requirements by prototyping an application functionally, developing new reports and performing ad hoc queries immediately. MIS can efficiently develop new, associated applications sharing common data and built utilizing the existing architecture. The Cullinet architecture segments the program logic, edit and validation criteria, as well as the security and recovery process, and therefore the complexity of creating new application functionality is significantly reduced.

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NEWS

Print quality, speed sway firm to ion deposition system

CORVALLIS, Ore. — When a worldwide engineering company headquartered here replaced its decade-old impact printers, the new system chosen was one based upon ion deposition technology.

CH²M Hill Ltd.'s computer systems — three Digital Equipment Corp. Decsystem-10s, a DEC VAX-11/750 and a VAX-11/785 with specialized software for computer-aided engineering applications — include a Digital Communications Associates, Inc. network that ties together its 35 U.S. offices. According to Stan Carpenter, Hill's data processing production manager, the systems perform engineering, scientific, technical, management and accounting processes.

"We generate many different reports for our offices around the country, and the output quality of our impact printers was just not satisfactory," Carpenter said. "They were older machines, and while we could have just replaced drums and other parts, they still were slow." The four old Data Products Corp. impact printers — a mixture of Models 2470 and 2550 — produced output on continuous three-ply forms that often required bursting, reduction to 8½ by 11-in. paper on a copier, hole punching and insertion into notebooks, he said.

After extensive research and investigation, Carpenter reported, he selected two Mercurion 1 60 page/

min. printers from Southern Systems, Inc. in Clearwater, Fla. The printers reportedly cost approximately \$67,000 each.

The new printers produce all originals on 8½ by 11-in. sheets, already three-hole drilled, Carpenter said. The printers also offered other features that CH²M Hill will add to its DP production capabilities — logo imprinting and forms generation, he said. The company's old devices printed 900 line/min., compared with 3,600 line/min. for the new ones.

Print output volume

CH²M Hill's print output volume is about 500,000 pages per month, Carpenter said. The two considerations

that topped his list of requirements for new printers were cut-sheet capability and print quality. Other cut-sheet printers that Carpenter examined were either unable to print the number of copies he needed per month or were too expensive, he said. During his search, Carpenter also talked with users of the equipment he was considering.

The Southern Systems printers — installed in November 1984 — were projected to save about \$24,000 per year in paper costs, but the actual paper savings has been in the \$10,000 to \$12,000 per year range, Carpenter said. The DP manager discovered that if he used the quality of paper that could save him \$24,000 per year, it caused printer jams and none of the paper had the high-quality look that he wanted.

A big savings for the company is in maintenance fees, Carpenter said. "We sent our own staff person to the Southern Systems factory in Clearwater for a week, and we're now doing our own in-house maintenance." CH²M Hill bought a \$25,000 spares kit along with its new printer so that it can do all it needs to do for maintenance in-house, he said.

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The deadline for submission of papers is Jan. 6, 1986. Both original summary and the abstract should be forwarded to International Quantum Electronics Conference, Optical Society of America, 1816 Jefferson Place, N.W., Washington, D.C. 20036. For publicity information, contact the publicity chair: John W. Roy, Hughes Aircraft Co., 6155 El Camino Real, Carlsbad, Calif. 92008.

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By David Rier
and Edmunds Fine

Subtitled *Notes for Advanced Users*, this book takes on problems encountered by people who explore beyond the normal corporate use of the world's best-selling software package.

The authors are users from Dennison Manufacturing Co., and they lend a good sense of what the advanced user encounters.

The basic tenet here is that "anyone who uses 1-2-3 will sooner or later need to develop some capability of telling 1-2-3 what to do in an orderly manner — in other words, program using the macro language instructions provided within 1-2-3."

A healthy bit of the book explores macros, how to use them with ease and power and without disaster and grief.

In the "Rest of the Story" section, the authors explain saving files from within a macro, changing dates within titles, data filing and recovery and much more.

Paperback, 243 pages, \$14.95, ISBN 0-201-16901-0, by Addison-Wesley Publishing Co., Reading, Mass. 01867.

THE SOFTWARE CATALOG: MINICOMPUTERS

From Elsevier Science Publishing Co., the respected international publisher, comes the latest edition of the *The Software Catalog*. This edition on minicomputers presents more than 7,000 program descriptions for all major systems.

The 450 pages of vendor listings runs from A 2 Devices to Zilog, Inc. It is also cross-referenced according to computer system, operating system, programming language, microprocessor, subject, applications and keyword indexes.

The once-a-year publication comes with a supplemental update after six months. The supplement is priced at \$25.

Elsevier also publishes 1985 editions of *The Software Catalog* on microcomputers, science and engineering, business software and health professions.

Paperback, 850 pages, \$125, ISBN 0-444-00982-5, by Elsevier Science Publishing, 52 Vanderbilt Ave., New York, N.Y. 10017.

THE S. KLEIN DIRECTORY OF COMPUTER GRAPHICS SUPPLIERS

The computer graphics industry has grown fourfold since 1980, at least as measured by the growth in listings contained in this directory. The fourth edition presents 550 suppliers in the computer graphics field, including computer-aided design and manufacturing, business graphics and imaging.

The directory gives bare bones corporate data, such as addresses, number of employees, person to contact and year founded. There follows

a list of the types of products the company offers in the graphics hardware, software, turnkey systems and services areas.

Specific models and numbers would be helpful here, as well as some information on the model's date of introduction, target user or performance.

Paperback, 202 pages, \$65, ISBN 0-914849-01-8, by Technology & Business Communications, Inc., 730 Boston Post Road, Sudbury, Mass. 01776.

Publishers wishing to have their books considered for review can direct books, prepublication galleys, press releases, catalogs or other information to George Harrar, Book Review Editor, Computerworld, P.O. Box 880, 375 Cochituate Road, Framingham, Mass. 01701.

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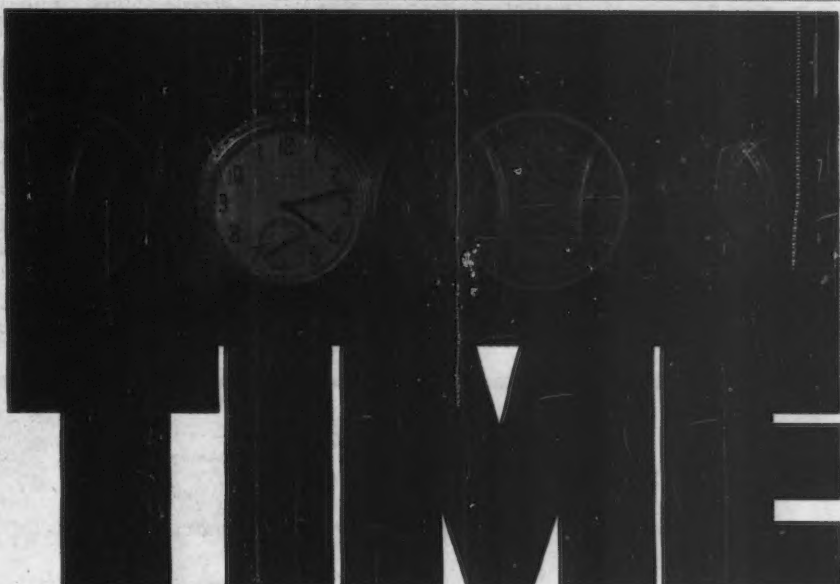
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NEWS



CALENDAR

WEEK OF OCTOBER 13

OCTOBER 13-16, WASHINGTON, D.C. — **Information Science Inc.'s 16th International Users Conference on Human Resource Management.** Contact: Information Science, Inc., 95 Chestnut Ridge Road, Montvale, N.J. 07645.

OCTOBER 14-15, SAN FRANCISCO — **Direct Response Marketing for Financial Institutions: Telemarketing, Direct Mail & Sales Training.** Contact: Alice Gibbons, Inter-Financial Association, 21 Tamal Vista

Blvd., Corte Madera, Calif. 94925. Also set for Oct. 21-22 in Los Angeles.

OCTOBER 14-16, PHILADELPHIA — **Managing Application Software Support Workshop.** Contact: Infosci, Inc., Box 7117, Menlo Park, Calif. 94026.

OCTOBER 14-17, NEW YORK — **Info '85 — Information Management Exposition & Conference.** Contact: Cahners Exposition Group, Client Services, P.O. Box 3833, 999 Summer St., Stamford, Conn. 06905.

OCTOBER 14-18, BOSTON — **Management Workshop.** Contact: Judy Trelogan, Arthur Young & Co., 1950 Roland Clarke Place, Reston, Va. 22091.

OCTOBER 14-18, NEW YORK — **Structured Systems Analysis Workshop.** Contact: Elise Rabalais, Learmonth & Burchett Management Systems, Inc., Suite 405, 2800 N. Loop

West, Houston, Texas 77092.

OCTOBER 15, CHICAGO — **Transacting Business Electronically: Insights Into a Rapidly Changing Field.** Contact: Chi/Cor Information Management, Inc., 10 Riverside Plaza, Chicago, Ill. 60606.

OCTOBER 15-16, NEW YORK — **IMS Recovery Restart.** Contact: Sys-Ed, Computer Education Techniques, Inc., 35 W. 35th St., New York, N.Y. 10001.

OCTOBER 15-17, NEW YORK — **Implementing SNA.** Contact: Sys-Ed, Computer Education Techniques, Inc., 35 W. 35th St., New York, N.Y. 10001.

OCTOBER 15-17, WASHINGTON, D.C. — **Data Base: A Manager's Guide.** Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402.

OCTOBER 15-17, WASHING-

TON, D.C. — **The Micro-Mainframe Connection.** Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402.

OCTOBER 15-18, HOUSTON — **CMC '85 and A/E Systems — Fall.** Contact: Conference Director, CMC '85 and A/E Systems — Fall, P.O. Box 11318, Newington, Conn. 06111.

OCTOBER 16-17, LOS ANGELES — **The Yates Second Annual Unix Market Forum.** Contact: Yates Ventures, Suite 201, 3350 Bayshore Road, Palo Alto, Calif. 94303.

OCTOBER 17-18, DENVER — **Federal ADP and Telecommunications Procurement.** Contact: International Data Corp., Washington Division, Suite 240, 1500 Planning Research Drive, McLean, Va. 22102. Also being held Oct. 31 to Nov. 1 in San Antonio and Nov. 14-15 in McLean.

OCTOBER 17-18, NEW YORK — **VS Cobol II.** Contact: Sys-Ed, Computer Education Techniques, Inc., 35 W. 35th St., New York, N.Y. 10001.

OCTOBER 17-18, PHILADELPHIA — **Rapid Prototyping Workshop.** Contact: Infosci, Inc., Box 7117, Menlo Park, Calif. 94026.

OCTOBER 17-18, ATLANTIC CITY, N.J. — **The Third Annual NCR Users Eastern America Conference.** Contact: Jack Hibberd, A.D.R., Inc., P.O. Box 429, Willow Grove, Pa. 19090.

WEEK OF OCTOBER 20

OCTOBER 21-23, SAN FRANCISCO — **Lamond on IBM.** Contact: Reggi Veatch, National Marketing, Suite E-1A, Standard Court East, 9160 Red Branch Road, Columbia, Md. 21045. Also being held Oct. 29-31 in Dallas and Nov. 4-6 in Boston.

OCTOBER 21-23, BOSTON — **Hammer Forum '85: Shaping the Second Revolution in End-User Computing.** Contact: Hammer and Co., Hammer Forum, 5 Cambridge Center, Cambridge, Mass. 02142.

OCTOBER 21-23, WASHINGTON, D.C. — **Controlling Software Projects: Management, Measurement and Estimation.** Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402. Also being held Dec. 9-11 in Dallas.

OCTOBER 21-24, CHICAGO — **Systems & Applied Technology Conference & Exhibition (Satech '85).** Contact: Satech '85, 2472 Eastman Ave., No. 34, Ventura, Calif. 93003.

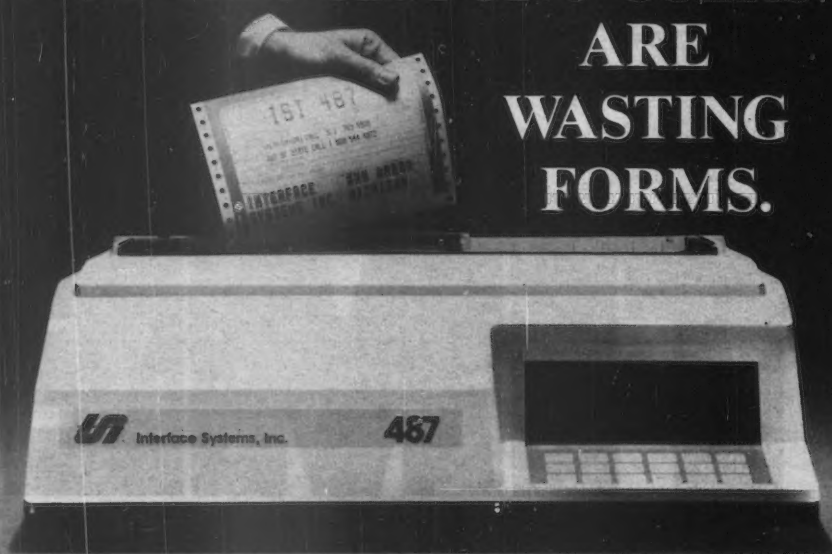
OCTOBER 21-24, PITTSBURGH — **Work Measurement Techniques Workshop Series.** Contact: Institute of Industrial Engineers, Registrar, 25 Technology Park/Atlanta, Norcross, Ga. 30092.

OCTOBER 21-25, NEW YORK — **Comprehensive Course in Data Communications.** Contact: Data Communications, Special Projects Conference Management Center, c/o Information-Breakthroughs, Inc., 445 W. Main St., Wyckoff, N.J. 07481. Also being held Nov. 18-22 in Lake Buena Vista, Fla.

OCTOBER 21-25, WASHINGTON, D.C. — **Ada Software Engineering Workshop.** Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402. Also being held Oct. 28 to Nov. 1 in Los Angeles.

OCTOBER 21-25, BOSTON — **Analysis Workshop.** Contact: Judy Trelogan, Arthur Young & Co., 1950 Roland Clarke Place, Reston, Va. 22091.

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For more information about the ISI 487 and our other IBM compatible (fully integrated, *no box!*) printers, like the ISI 736 letter quality printer with twin sheet feeder, call, write, or TWX us today!



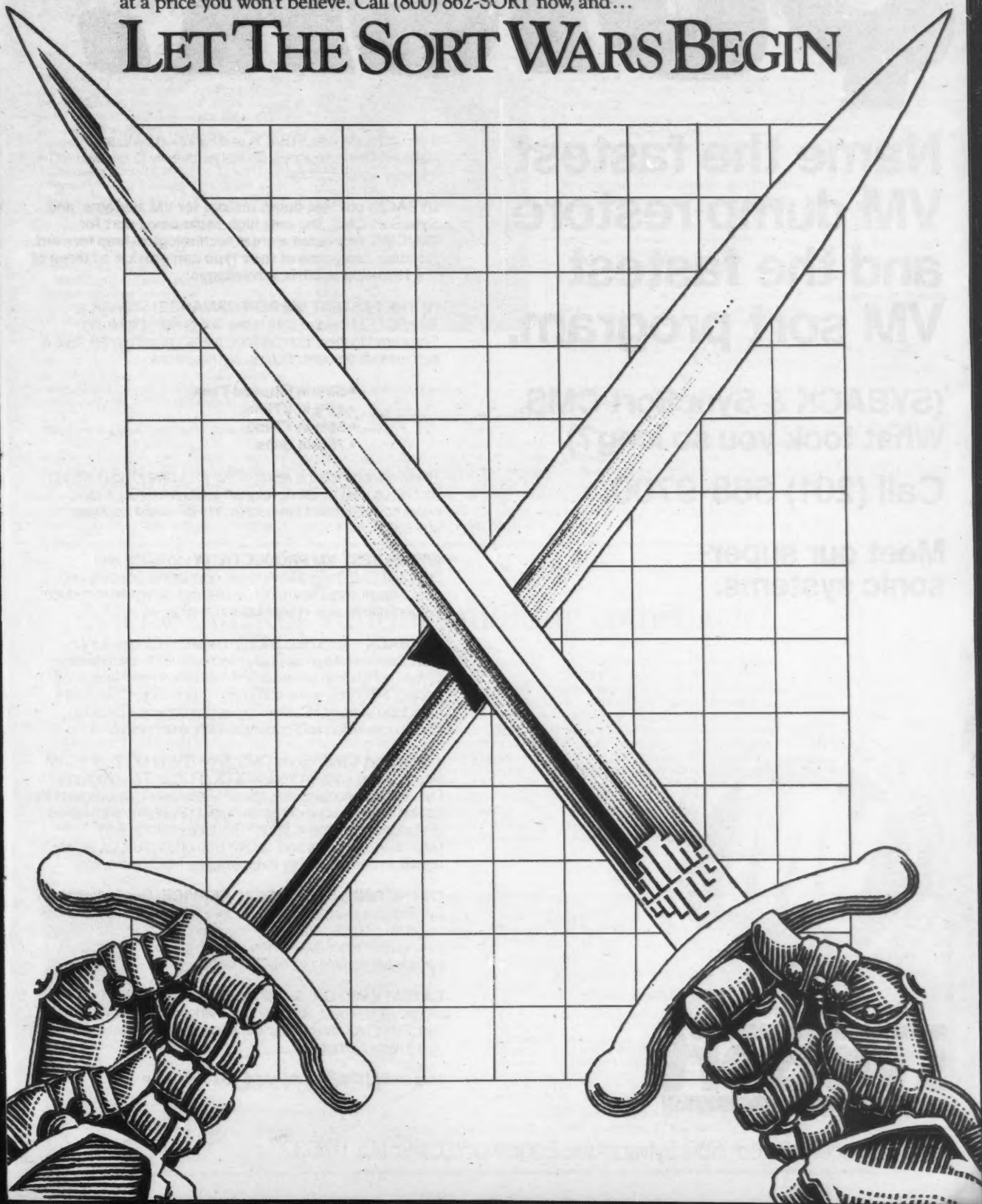
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SOFTWARE & SERVICES

Computerworld talks with Jerome Garfunkel

Expert addresses Cobol 85 standard

If it seems as if you have been hearing about the Cobol 85 standard — assuming that the proposed Cobol standard is approved this year as expected — for a long time, you are absolutely right. Technically, work on Cobol 85 began in 1978. The proposed Cobol 85 standard is only now entering the final stages of both American National Standards Institute (Ansi) and International Standards Organization (ISO) approval. It has been the subject of intense, sometimes vitriolic, debate. A controversy stemming from Cobol 85's perceived incompatibility with earlier standards for the language sidetracked the proposed standard for years.

With the standardization process winding down, *Computerworld* Senior Editor John Gallant talked with Jerome Garfunkel. Based in Litchfield, Conn., Garfunkel is a Cobol 85 consultant who, as a member of the Ansi X3J4 Cobol committee, was a central figure in the birth of the language. He has lectured, designed, taught training courses in the use of Cobol 85 and has written extensively on the subject.

What are the final hurdles for Cobol 85?
The final part of the Ansi procedures say we [the X3J4 committee] must demonstrate that we have gone out for public review and have answered it. An Ansi committee called the Board of Standards Review is the final judge to ensure that all the procedures have been followed and that this is



Jerome Garfunkel

indeed an industry standard.

How would you characterize the period of public review?

Hectic. The first round of public comment drew 2,200 comments, 1,700 of which were negative form letters; the second round produced 925 letters, also the vast majority negative form letters; the third round produced only about 25, many of them from people withdrawing their for-

mer comments.

The last one seemed apathetic, which is sort of a good thing. I don't know any language at all that has received the kind of attention Cobol 85 has. I'm glad it was a debate [in which] people got involved. I wish that they had been a little better informed, however.

How do you react to criticism that the Cobol 85 standard took too long to be drafted?

Part of me wants to be defensive because I was part of the system. But part of me says the criticism is absolutely correct. And the prediction that Cobol won't survive unless it becomes more state of the art is probably correct. I don't mean to poo-poo the large inventory of Cobol programs. But if Cobol is not a good application development tool and the only reason Cobol was surviving was because of its large inventory of source programs, it will only be a decade or so before the language disappears altogether.

Cobol can only survive if it continues to be a good development tool. The new Cobol language is an essential part of that.

When does the next Cobol standardization process begin?

It has already begun. We hardly got to breathe a sigh of relief. One of the major things that happened in Vienna last year at the International Conference on Cobol

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■ An enhanced version of the S.1 development system was unveiled by Teknowledge/44

■ Online/Data-base Software introduced the Application Builder, a Cullinet Software ADS/On-Line applications development tool for the IBM Personal Computer/45

■ Softline: Frank Sweet discusses doable, durable data bases/47

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SOFTALK

Niche market vendors making comeback?

By John Gallant

In the last several years, the major applications software vendors have talked about little else than integration of their products and the delivery of so-called development or integration environments. Examples of such environments include Management Science America, Inc.'s Information Expert and McCormack & Dodge Corp.'s Millennium.

The buzzword "integration" has come to represent so many things to so many people and has been so blatantly misused by people in the industry that it has become almost meaningless. And the

term "development environment" is also in danger of being rendered useless.

Those issues aside, another question comes to mind. In the rush to integrate their applications portfolios in one way or another and churn out such development environments, have the large applications software vendors forgotten something? In the drive to become one out of the handful of megasoftware companies that strives to be all things to all users, have the vendors lost sight of what those users really wanted in the first place from an applications software company?

John Landry III and Robert Weiler, former top executives of M&D, think they have. Landry and Weiler departed from M&D last month to become chairman and president, respectively, of Lexington, Mass.-based Distribution Management Systems, Inc., which, as its name implies, markets distribution management applications for the IBM mainframe and Digital Equipment Corp. VAX worlds.

The duo feels the big guys in the applications world have begun to lag in applications functionality in the quest to

Continued on page 54



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BIM has 15 system software products for improving productivity and use of DOS/VS, OS, and CICS, and also performs systems programming consulting. Marketing agents in most countries.

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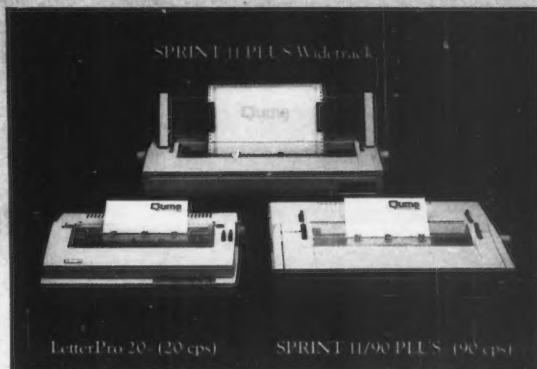
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SOFTWARE & SERVICES

Pyramid unveils compilers

Pyramid Technology Corp. of Mountain View, Calif., has announced optimizing Fortran 77, C and Pascal compilers for its Pyramid 90X, 90MX, 98X and 98XE processors.

The compilers work with Pyramid's Common Language Environment, a standardized high-level program development and execution environment integrated with Pyramid's OSX operating system. The operating system is said to incorporate both the University of California at

Berkeley's Unix 4.2 and AT&T's System V Unix features.

The Pyramid enhanced development environment includes a source-level debugger, a fast code generator and global optimizer and runtime environment for C, Fortran 77 and Pascal. The compilers are optimized for Pyramid's reduced instruction set computer architecture.

The C optimizing compiler will be bundled and shipped with OSX. Pyramid's optimizing Pascal and Fortran 77 compilers cost \$6,000.

Teknowledge's S.1 now in C

Teknowledge, Inc. of Thousand Oaks, Calif., has announced Version 2 of S.1, its development software for knowledge-based systems. The updated version has been rewritten in the C language, the vendor said.

S.1 reportedly runs on a variety of processors, including the AT&T 7300, the Digital Equipment Corp. Microvax, the Symbolics, Inc. 3690, the NCR Corp. Tower 32 and the Apollo Computer, Inc. DN320 and DN550.

Version 2 of S.1 is a combined package of software, training and support. The conversion to C was done to make S.1 available for a wider variety of processors, a spokesman

said. S.1 will continue to be available for machines running Lisp, but future versions of S.1 will be built for nonspecialized implementation, the spokesman said.

S.1 has been used to develop knowledge systems for field service, plant management, engineering design and sales support, according to the vendor.

The delivery version of S.1 Version 2 will be available by year-end 1985. The full development version is scheduled for first-quarter 1986 delivery for a variety of processors running AT&T Unix or C. Prices range from \$25,000 to \$40,000, depending on hardware.

SYSTEMS SOFTWARE

■ J. William Bennett Co. has announced a job scheduling utility that runs under IBM's MVS operating system.

Jobtrac submits production and rerun library JCL. The package is capable of capturing Sysouts and supplying a tape archive. It maintains a job execution history and records Initial Program Load statistics.

The software supports Pansophic, Inc.'s Panvalet libraries for automated JCL submission and IBM ISPF editing. Jobtrac works with automatic JCL override or removal.

It runs under MVS/SP 1.1.2 and up. IBM's TSO ISPF/PDF is required for full-function TSO support.

A site license for Jobtrac is \$18,500, and a yearly maintenance fee costs \$1,850.

J. William Bennett, P.O. Box 96694, Houston, Texas 77213.

■ Duquesne Systems, Inc. has released Dasd tuning software for mainframes running IBM's MVS and MVS/XA operating systems.

The Dasdmon package is said to provide on-line information showing contention in the Dasd subsystem. The software displays path, volume, job and data set information on request. Performance-level standards are preestablished by the customer, and Dasdmon will alert the user to problems that may be slowing on-line systems response.

The Dasdmon package costs

\$10,000 for a 99-year lease.

Duquesne Systems, Two Allegheny Center, Pittsburgh, Pa. 15212.

■ Boole & Babbage, Inc. has announced the CICS Manager real-time monitoring, tuning and analysis system for IBM CICS users with DOS or MVS operating systems.

CICS Manager is intended as an aid to systems programmers in finding CICS trouble spots. The system provides on-line tuning suggestions for corrective action. Every area of CICS can be monitored in real time through overview screens. The system also incorporates a batch reporting facility for printing out and analyzing information.

CICS Manager provides a problem screen that examines areas ranging from short-on-storage conditions to transactions waiting on Vsam strings. The system also displays screens that report on activities, transactions, files, storage, terminals, programs and, for DOS environments, DL/I activities.

The DOS version of CICS Manager costs \$8,000, and the MVS copy costs \$22,000. The product is available now.

Boole & Babbage, 510 Oakmead Pkwy., Sunnyvale, Calif. 94086.

■ Unitech Software, Inc. has announced the release of four systems software products for AT&T Unix systems.

SSL is a full-screen terminal man-

Continued on page 45

VICE-VERSA



The #1 3270 alternative for people who want more than compatibility.

Telex and IBM displays are truly plug compatible. In fact, for quality, reliability and full-system performance, they're

interchangeable. But that's where the similarity ends.

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SOFTWARE & SERVICES

IBM micros get building aid Analysis tool out for VAX

Reportedly functions like ADS/On-Line

Online/Database Software, Inc. of New City, N.Y., has announced the Application Builder, a package for the IBM Personal Computer XT or AT promising the same functions as Cullinet Software, Inc.'s ADS/On-Line application development environment.

Using the Application Builder, Cullinet Software IDMS users can design, code and generate all their ADS/On-Line dialogues on the microcomputer and then upload them to the mainframe for execution. Or, users can download existing mainframe applications for execution on the micro, a spokesman said.

The product runs in IBM's PC-DOS, Microsoft Corp.'s MS-DOS, AT&T's Unix and Microsoft Corp.'s Xenix environments.

The Application Builder gives the user access to IBM DOS functions, offers multilevel password protection, data base control and Help facilities. The product includes an integrated

data dictionary that supports IDMS and ADS/On-Line functions.

The on-line mapping function is compatible with IDMS on-line mapping. The dialogue generator is menu driven, and dialogue can be ported to most compatible computers, according to the vendor. The product's tutorial system features 16 lines of Help per field position and tutorials to help application developers learn IDMS and ADS/On-Line.

The Application Builder is priced at \$3,500 per microcomputer for the MS-DOS and PC-DOS versions. The product is scheduled for November availability. Versions supporting Xenix and Unix will be available in the first quarter of 1986.

BBN Software Products Corp. has announced that its RS/1 data analysis package for scientific, engineering and industrial applications is now available for Digital Equipment Corp.'s VAX processors.

Release 2 of RS/1 is said to be faster and easier to use and is said to offer more functions than the previous version of the software, the Cambridge, Mass.-based vendor said.

Features of the release include an added table editor and improved graphics editor functions. Users can now customize the display features and provide form-like entry of data into tables. With improved graphics functions, users can now graph dates, times, money and text. The

graphics editor can be used to create a data axis with a daily, weekly, monthly or quarterly format.

A command line editor allows VAX VMS users to correct misspelled words. Release 2's money format includes dollar signs, commas between thousands and parentheses for negative numbers. Additional analytical tools include spline fits, probability plots, histograms, principal components analysis and contour plots.

Release 2 will run on DEC's VAX and Microvax II series processors under VMS, DEC's Ultrix or the University of California at Berkeley's Unix 4.2 operating system. Release 2 costs from \$6,000 to \$69,000, depending on the processor.

YOU DON'T NEED A COMPUTER TO FIGURE OUT WHICH IS THE BEST WORD PROCESSOR.

Continued from page 44

ager and applications development system with automatic capabilities for menu formatting, screen and table handling and data base calls. The mainframe version costs \$4,400, including a compiler.

SPR Super Spooler is a full-feature print spooling and batch job scheduling system featuring multiple device support, multiple queues, manual or automatic device assignments and background job scheduling. The mainframe version costs \$975.

SSE is a full-screen editor for Unix developers and nontechnical end users with full text editing functions. The mainframe version costs \$410.

S-Telex is a hardware and software telex communications management system that can be used as a stand-alone system or integrated with text and word processing systems. The mainframe single-line system costs \$1,365; each additional line costs \$280.

The products are available for most Unix versions.

Unitech Software, P.O. Box 7490, McLean, Va. 22106.

■ Kolinar Corp. has announced an enhanced version of Kprobe, its system software for IBM VM/CMS systems.

Kprobe is a program test and debug tool for software developers who design products for the IBM mainframe environment. The enhanced version of Kprobe reportedly includes a Snap Dump facility to capture main storage contents without interrupting program operation.

Kprobe is provided for a \$2,600 annual license fee and an initial charge of \$1,300.

Kolinar, 3064 Scott Blvd., Santa Clara, Calif. 95054

■ Infocentive Systems has announced the Infoman software utility for IBM CICS users. Infoman is said to enable users to alter and

Continued on page 46

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MicroPro.

This updates and corrects comparisons with MultiMate which appeared previously. For a complete comparison chart, write: MicroPro, Dept. 2000, 33 San Pablo Ave., San Rafael, CA 94903. Specifications are for the latest released versions of all products effective July 1985. MultiMate is a trademark of MultiMate Corp.; Microsoft is a registered trademark of Microsoft Corp.; WordStar and MicroPro are trademarks of MicroPro International.

SOFTWARE & SERVICES

Continued from page 45

and screen display data to create tutorials, Help screens, coding schemes, security access control and data validations.

When applied to CICS applications, Infoman is said to modify the programs to user requirements. On-line tools are provided to make fixes to CICS application software.

Infoman is priced at \$3,500 for DOS/VSE installations and \$4,500 for OS/MVS systems.

Infocentive Systems, 10229 Lower Azusa Road, Temple City, Calif. 91780.

PRODUCTIVITY AIDS

■ **H&A Computer Products, Inc.** has announced the Query Report Program for the IBM Series/1 minicomputer.

Query Report Program allows non-technical users to create reports tailored to their needs without help from a programmer.

Users can select, sort, format and retrieve data to run a report using a series of menus. Report specifications can be saved to run the report at a later date.

The Query Report Program is priced at \$1,500.

H&A Computer Products, 522 Washington St., San Francisco, Calif. 94111.

■ **Lawson Associates, Inc.** has an-

nounced Access+, a dictionary-driven query and report writer system for IBM mainframe users. The product runs in DOS and OS environments.

Access+ provides on-line query capabilities or hard-copy report output and allows users to access multiple applications in one request, a spokesman said.

End users can design their own reports without assistance from DP personnel.

Access+ for DOS is priced at \$22,000. The OS version is priced at \$28,000.

Lawson Associates, 2021 E. Hennepin Ave., Minneapolis, Minn. 55413.

■ **The John Fluke Manufacturing Co.** has announced the Prolink Personal Computer Program Development Package, which links an IBM Personal Computer or Personal Computer XT or AT with the Fluke 2400B Intelligent Computer Front End.

Prolink Personal Computer simplifies creation of data acquisition and control applications that execute on the 2400B.

Prolink allows the IBM Personal Computer to download its applications programs to the 2400B. The Fluke 2400B then handles all conversions, linearizations, limit checking and data buffering.

Using menu selections, an operator can create and edit 2400B measurement and control programs. Menu choices allow programs to be

checked for errors and to be downloaded to and retrieved from the 2400B. Systems with up to 100 channels can be supported by the system.

The Prolink Personal Computer package is priced at \$450.

John Fluke Manufacturing, P.O. Box C9090, Everett, Wash. 98206.

■ **Antek Software, Inc.** has announced Allegro, systems software designed to speed the processing of IBM Vsam files under DOS/VSE without requiring modifications to files, programs or JCL.

By operating as a front end to Vsam open processing, a spokesman said, Allegro allows programs that normally use the default buffer specifications, such as Cobol programs, to use more efficient values.

Allegro is available for a permanent license fee of \$2,500, an annual lease of \$1,000 or a monthly rental of \$100.

Antek Software, 5419 Oliver Ave. N., Minneapolis, Minn. 55430.

APPLICATION PACKAGES

■ **GEC Software Ltd.** has announced Gecom, a cost estimating and project management tool for Digital Equipment Corp. VAX processors and Sun Microsystems, Inc. workstations.

Gecom provides software managers with estimates of duration and staffing profiles before the start of a project and throughout its progress. The product is said to allow managers to examine alternative scenarios for handling a project.

Once the development approach has been decided, Gecom is said to automatically provide estimates by work activity and by phase of development.

The system is available for the DEC Microvax and VAX-11/730 through 785 under the University of California at Berkeley's Unix 4.2 and DEC's VMS. It is also available on Sun workstations.

The first systems will be available in November and will cost \$16,000 on VAX processors. The price for Sun workstations is \$9,500.

GEC Software, 132/135 Long Acre, London, England WC2E 9AH.

■ **Massoglia and Associates, Inc.** has announced the Stat/38 statistical analysis system for IBM's System/38 and enhancements to its Stat/36 and Stat/34 statistical analysis packages for the IBM System/36 and System/34.

Stat/38 provides an external file interface that permits statistical analysis of data stored by other applications. It copies and formats data from any internally or externally defined file to a matrix file.

The Stat/38 analysis program provides a variety of data manipulation, mathematical and statistical functions with display and report output. Features of the program include interactive, command-controlled operations, on-line assistance displays describing program operation and the use of each command and user-assigned names for the columns and rows of a matrix.

Stat/38 is licensed for a one-time fee of \$17,500.

The company also announced re-

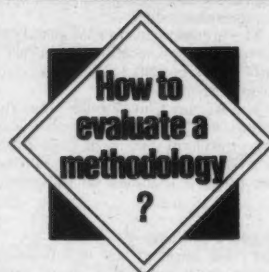
lease 3.1 of the Stat/36 and Stat/34 statistical analysis systems. The enhanced versions offer improved file handling capabilities, increased flexibility and improved statistical analysis facilities. Stat/36 and Stat/34 are licensed for a one-time fee of \$5,000.

Massoglia and Associates, Suite 102, 4970 Northwind Drive, East Lansing, Mich. 48823.

■ **Matra Datavision, Inc.** has announced Surfap, a numerical control application for surface milling operations. Surfap is used in conjunction with Matra Datavision's Euclid computer-aided design and manufacturing system.

The Euclid system is based on true three-dimensional solid modeling techniques. Surfap runs on the Digi-

Continued on page 52



Are you grappling with high maintenance costs and a long backlog of requests? If the answer is yes, you're probably already investigating some possible solutions.

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These questions will help you to see the distinctions between methodologies, detect their strengths and weaknesses and, ultimately, discover which one will help you accomplish your goals.

You can get a free copy of "How to Evaluate a Methodology" by calling our toll-free number, 800/255-2459, or sending your business card to: Ken Orr & Associates, Inc., 1725 Gage Blvd., Topeka, KS 66604-3379.

Ken Orr & Associates is a computer software research and development company specializing in the design of industrial-grade information systems.



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SOFTWARE & SERVICES

Durable, doable design characterizes sound data base



SOFTLINE
Frank Sweet

By Frank Sweet
Special to CW:

The two hallmarks of a sound data base design are that it is durable and doable.

A durable design survives changes in the business environment. Managers and policies, products and styles come and go. But a data base represents millions of dollars' worth of painstakingly collected data about a firm, and it better not come and go with the changes.

A doable design is one that is easy to implement. It capitalizes on the one gift all people share — people get better at anything with each repetition — and it does not penalize a common flaw — that people never get anything right the first time.

Durable data bases survive the very applications that created them. One shop, for example, has been through two payroll systems, a now-defunct workmen's compensation system and two security systems in the past seven years. Yet its employee data base, which those applications used, has been chugging away without interruption since first installed. At the other extreme lies the painful case of a design so dependent on transitory management style that it was unknowingly wrecked by the stroke of an executive pen mere weeks after implementation.

Durability not accidental

Understand, durability is no accident. It is deliberately built into data base designs by modeling underlying business reality, making sure the resulting data base is sharable among applications and making it expandable with new data.

Modeling reality means that data structures reflect real events, real activities. They must not simply mimic records in other filing systems such as forms and documents. Specific forms can be abolished while the concepts of products, vendors, customers or employees cannot. Modeling reality means determining designs by the business processes they will support.

Sharing the data base among applications means that different people use the same data base for different purposes. Data base administrators call this avoiding redundancy, and there are three reasons why it is important.

First, redundant data implies redundant data updaters, and it is pointless to have two people doing the same job. Also, the more users, the greater the incentive to keep data accurate. Thus, the data becomes more timely and reliable for everyone. Finally, the more widely a data base is shared, the more durable it is. Its users anchor it against being

”

A doable design capitalizes on a gift people share — they get better at anything with each repetition — and it does not penalize a common flaw — that people never get anything right the first time.

blown away in one of the yearly tempests of reorganization.

Making the data base expandable to new data means developing the skills and tools to add fields to existing records, new records to existing files or new files to the data base

without shutting down or retrofitting existing applications. Expandable data bases endure because each new application brings new data needs. Application developers will use the central data base if their needs are easily accommodated. Other-

wise, each group will go its own way, and the centrally shared data pool idea will be stillborn.

The most doable data base designs are those that can be brought up faster and with less effort than comparable flat files. The worst, of course, are those disasters where the application quickly reaches 90% completion and stays that way month after expensive month. The two secrets of making it doable are to include only what is needed and to keep it simple.

Data design conceals a treacherous twist to the dilemma. It is the urge to include too much. Designing a vendor file for a payables system,

Continued on page 52

WHO SAYS WORDSTAR 2000 IS SO GREAT?

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— *ComputerWorld*

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— *Popular Computing*

“Include WordStar 2000 on your shopping list—it's competitive with anything now on the market.”
— *Computers and Electronics*

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MicroPro.

Sweet is corporate manager of data administration for the Charter Co., a Fortune 100 firm in Jacksonville, Fla. He has worked with major data base management systems since 1970 and is a former president of the national (Cullinet Software, Inc.) IDMS User Association.

SOFTWARE & SERVICES

From page 41

CW interviews

Jerome Garfunkel

was that the ISO Cobol Committee, which is the international version of the Ansi X3J4 committee, decided to change the process used to standardize Cobol to speed it up. The process is killing the language. If the process is so slow that it delivers what we need too late, it's contributing to Cobol's death.

So [the] ISO decided to adopt the concept of Cobol supplements, and every few years we will add [new features] to the language.

But we will make sure that the supplements are com-

pletely compatible so we won't start up the incompatibility controversy.

That controversy was mainly over incompatibilities between the new language and older versions.

Some observers were very vocal about those alleged incompatibilities between Cobol 85 and earlier versions. Have all those issues been resolved? Were those criticisms valid?

No, the issues have not all been resolved to the satisfaction of those people who held what I believe was a radical view. That is a fairly controversial word to use. I qualify it by an example.

We added a new verb called the EVALUATE verb that adds functionality to the language. I asked someone who was vocal about the incompatibility problems whether he was in favor of not adding the Evaluate verb because it was a new reserved word and technically — though we had an easy way of dealing with it — was an incompatibility. He said yes.

That is how adamant they were about causing no new incompatibilities.

When I heard that, I stopped taking that point of view very seriously. They had a legitimate point of view and they got us to pay attention to it. But we could not adopt that view to the point of killing the language.

Maintenance is one of the biggest concerns today. Do you think the reduction of maintenance work loads was a big enough concern to the drafters of Cobol 85?

Yes. If I had to pick one area in which Cobol 85 is strongest and who it will benefit most, it [would be] the maintenance function and the maintenance programmer.

The main beneficiary of well-structured code is the maintenance programmer. That is exactly what prompted many of these changes, the fact that systems maintenance was out of control. That is exactly what [resulted in] most of the important changes in Cobol 85.

The other concern is productivity. Is Cobol 85 geared to improving productivity?

If what you call productivity is application development productivity and you measure that by how fast an accounts receivable application can go from specification to executable code, then no, Cobol is not the most productive language to use.

We all know it is very wordy, and it is time consuming because it is self-documenting. It is not a speedy development tool. [It is] a practical solution to living with an existing system.

If we are going to build systems knowing they will need maintenance, there is no better language I know of for that task than Cobol.

Many of the fourth-generation language vendors claim that their products can handle the same programming tasks as Cobol and that eventually they will supplant Cobol. How do you respond to such prognostications?

The first part of that is true. Most of the fourth-generation languages can do what Cobol is doing, and they can probably do it a little more efficiently, in the sense that it takes fewer words to generate the same executable code.

The problem arises when you consider why we have

Cobol in the first place. Industry needed a common language. I see nothing on the horizon in terms of fourth-generation languages emerging to challenge Cobol in that role. That is much too important for industry to give up.

What do you consider to be the most attractive feature of the new standard and the things that will benefit users most?

The main criticism for Cobol has been its lack of structured statements; if you wanted to write structured programs according to theories of the last decade, you couldn't do them well in Cobol.

That is no longer the case.

Many new constructs of the language were added specifically to be in harmony with structured programming theories.

In retrospect, what would you like to have seen done differently in the drafting of Cobol 85?

I would like us to change the standardization rules so that what takes three years of normal procedures, forgetting about something like the incompatibility issue entering the picture, should only take a year.

We should be able to come up with a consensus without having to go through such fine detail of procedures as we do now.

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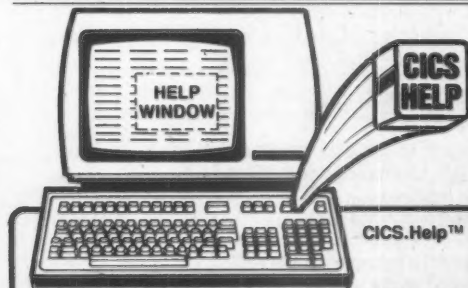
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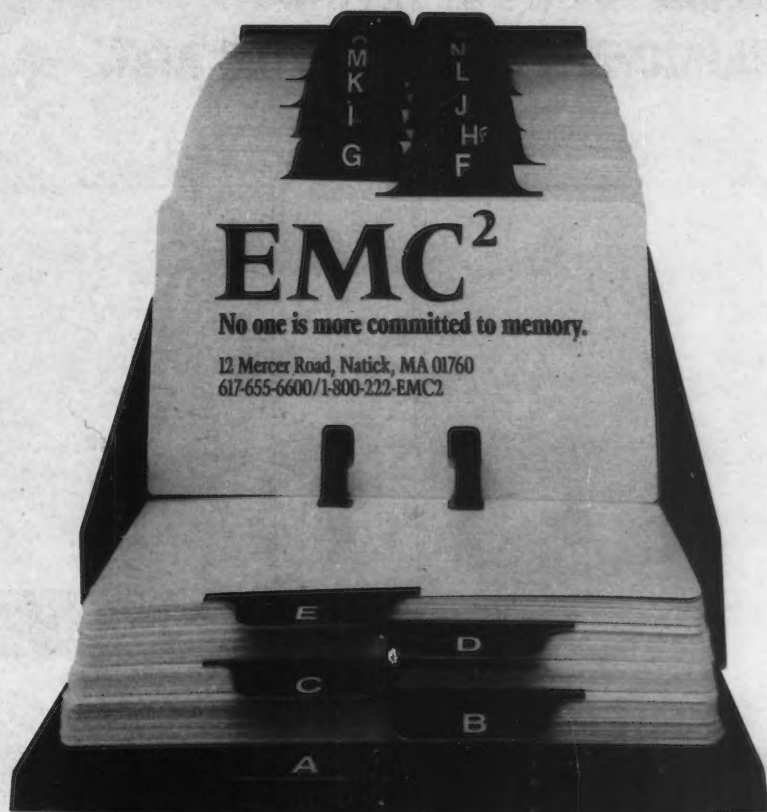
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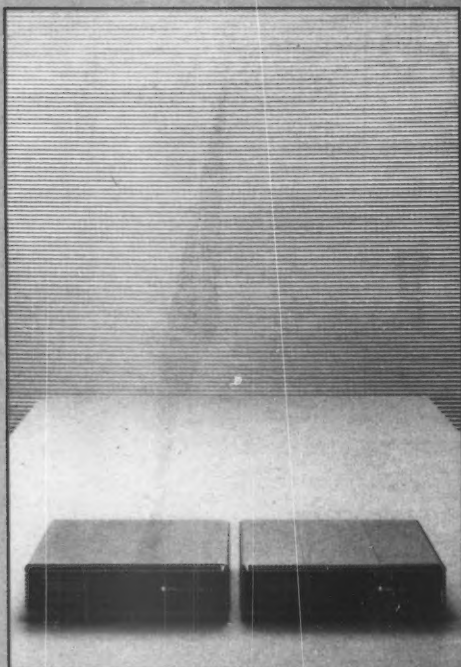
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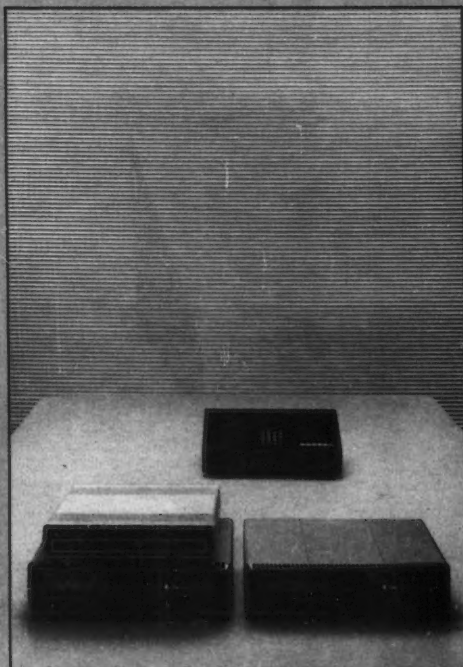
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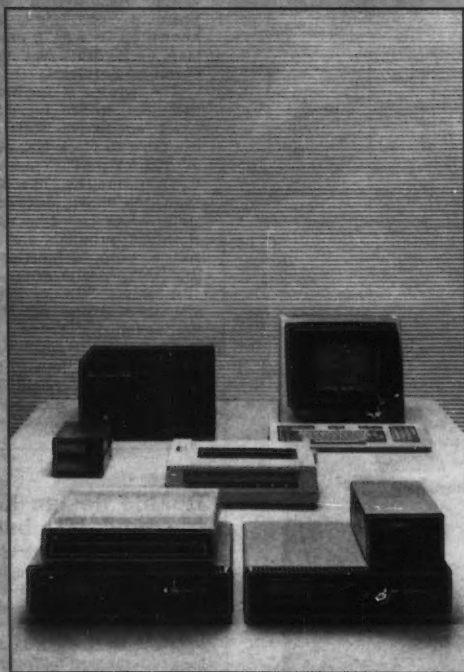
Build on the basics.

reliable transmission and sophisticated diagnostics. These modems are the backbone of our system.

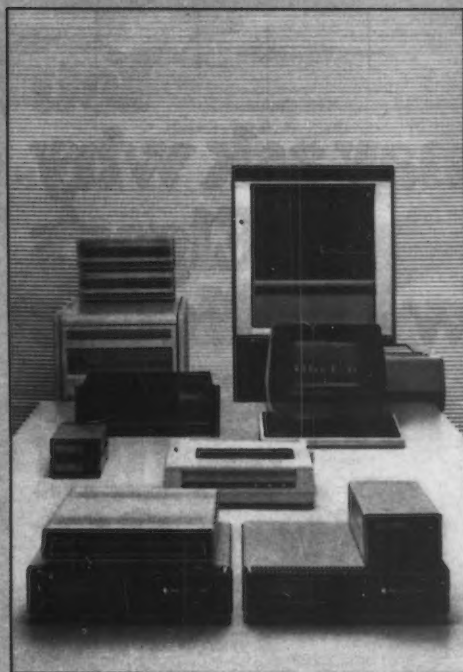
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SOFTWARE & SERVICES

Continued from page 46
tial Equipment Corp. VAX family of processors and the IBM 3030, 3080, 3090 and 4300 lines. Surfapt is priced from \$20,000 to \$60,000.

Matra Datavision, 30 Commerce St., Woburn, Mass. 01801.

LANGUAGES

■ Feat, Marwick, Mitchell & Co.'s Catalyst Group has an-

nounced a service that converts mainframe assembler language code programs to structured Cobol.

The Mainframe Assembler to Structured Cobol Translator (Mascot) reengineering service is said to deliver structured Cobol code, centralized mainline processing logic, isolated I/O for each program, performable routines and self-documenting code.

A spokesman said the cost of the Mascot translation ser-

vice is typically \$1.50 to \$3 per line of assembler code. It varies according to program complexity and adherence to assembler language programming standards.

Feat Marwick Catalyst Group, Suite 2200, 303 E. Wacker Drive, Chicago, Ill.

REMOTE COMPUTING SERVICES

■ General Electric Information Services Co. (Geisico) has announced a service called Ascii-to-IBM 3270 protocol conversion, also known as IBM 3270 emulation, on its Mark Net Asynchronous Service.

The service is facilitated through Simware, Inc.'s SIM 3278 emulation software, available to Mark Net users in IBM VM, MVS/Vtvm and PC-DOS versions. The 3270 emulation allows more than 50 different Ascii-type asynchronous terminals and microcomputers to function as IBM 3278 Model 2 terminals.

A single-CPU, perpetual SIM 3278 license for Mark Net users costs \$15,500 for the Vtvm version, \$9,500 for the VM version and \$7,500 for the PC-DOS version.

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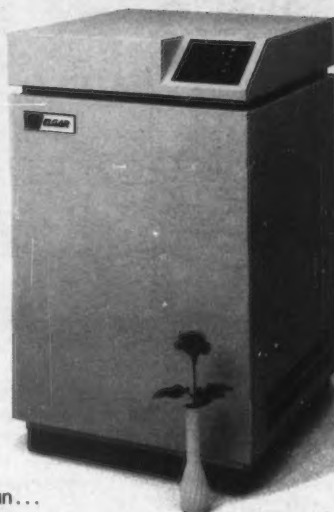
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From page 47

Doable design key to sound data base

you may need a vendor identification number, name, address and amount owed. You should stop, but temptation draws you on.

"We're designing a data base to be shared by future applications," you reason. "Shouldn't we find out what they'll need and include it too?" The bait looks tempting — doing a thorough job — and the risk slight — a few days' extra work.

But, to do it, you would have to identify every data element, every attribute of a vendor that any user could ever want for any conceivable purpose.

The power of data base management systems with the subschema notion, like Cullinet Software, Inc.'s IDMS, is that they enable records to be stretched to include new fields as new applications arise and do so without making users track down and recompile existing programs. So, the first way to make a data base design doable is to include only what is needed at the time the data base is designed.

The second secret of doability is to keep it simple, and this implies modularity. There is really only a handful of basic data base design patterns. They are used, like building blocks, in one application after another.

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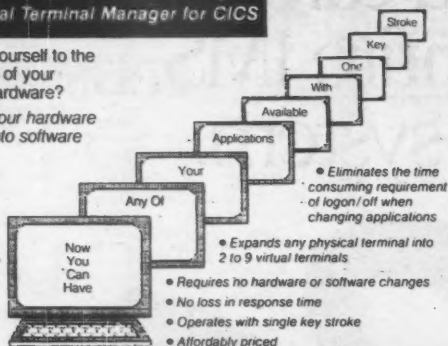
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SOFTWARE & SERVICES

From page 41

Niche market vendors making comeback?

tie systems together and offer standardized development environments. Thus, smaller vendors that work only within a specific niche market — and target their R&D efforts solely toward improving the quality of their applications — have lately been able to gain significant ground against the behemoths by addressing functionality rather than global integration.

"What happened," Landry said in a recent interview with *Computerworld*, "was that all the major players got involved in this push to integration and development environments. [M&D] was very much a part of that. But the big companies have focused almost solely on those

things, and in the feature/function aspect of their applications they are floundering."

That floundering has given niche dwellers an opportunity to prosper. For example, Landry said, Sunnyvale, Calif.-based Data Design Associates has lately begun to beat up on its larger competitors in the financial software arena.

"They didn't have all the bells and whistles like the big guys," Landry said. "But they were very successful in knowing what users wanted. The large applications vendors were trying to be all things to all people, and that is just too hard to do. It will take the next two or three years for the so-called integrated applications vendors to complete all that they have said they would do. They have to live up to a lot of claims."

According to Weiler, niche, or vertical market, applications software companies are making quite a comeback.

"The niche companies got hammered hard in 1983 and 1984," Weiler said. "A lot of users bought the major vendors' pitch about integration and development tools. But now users are again checking out the niche companies, they are looking for the functionality that the big guys haven't been able to deliver. The niche guys are coming back."

Landry's and Weiler's comments should not be misconstrued as a parting shot at their former employer or other large applications vendors. Nor are they a plug for Distribution Management Systems, undoubtedly a niche dweller — though in one of the more rapidly expanding niches.

And it must be remembered that even the biggest software companies were once niche dwellers of one sort or another and cannot be faulted solely for growing beyond their roots.

But the fact remains that the pair's views probably correspond to those of many users, those who are interested more in the quality of a particular application than in whether it can be linked to an accounts payable, manufacturing or human resource system.

Integration became a hot topic for a reason — users hoped to meld their applications into a single information resource. But integration is not the sole concern of users. In the rush to meet the demand for integrated products, applications vendors sometimes seem to have forgotten why users turned to packaged applications in the first place.

Users were looking to supplement their own development efforts with reliable systems that handled a particular business function as well, or nearly as well, as a custom, in-house application.



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and carrier jitter cancellation, it offers users the highest data rates and throughput available today.

The DSP19200 features an 8-channel TDM multiplexer. For flexibility, it provides a variety of data rate combinations, with individual speeds of from 2400 to 19,200 bps per channel. Additionally, a pair of data rate fallback systems selectively compensate for both line noise and bandwidth limitations.

With its integral soft-touch keypad, alphanumeric display and sixteen

LED indicators, the DSP19200 lets the user

- set the strapping options for local and remote unattended modems,
- perform diagnostics and bit error rate testing with a built-in pattern generator, local/remote analog and digital loopbacks,
- monitor transmit/receive and carrier detect levels
- monitor EIA interface control signals on all eight channels.

With its superior capabilities, the DSP19200 is a compact unit that measures just 12.6" w x 3.5" h x 15.6" d.

The new NEC DSP19200, with revolutionary O-QAM technology and highly comprehensive features, offers unmatched performance over existing telephone circuits. It is the unequalled choice for saving both time and money on high-speed data transmission.

NETWORK CONTROL AND MANAGEMENT SYSTEM (NCMS).

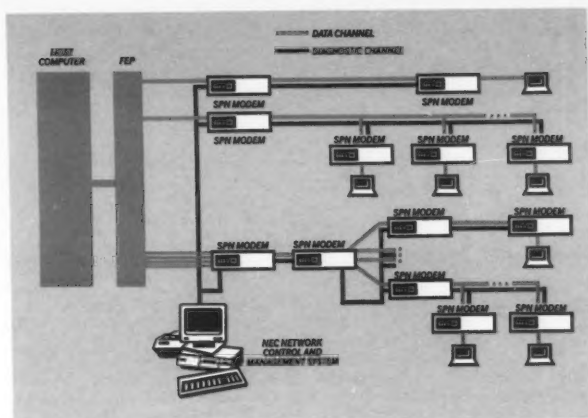


The NEC Network Control and Management System is a powerful, user-friendly troubleshooting tool for small to medium scale networks.

The menu-driven NCMS uses high-resolution color graphics, presenting easily interpreted information on all aspects of network activity. It allows quick response to network problems, simplifies day-to-day operation, and facilitates better system management.

Based on the versatile NEC APC III Computer, NCMS operates under UNIX(R), and includes mass storage, printer, and high-resolution color display.

NCMS uses NEC SPN Series intelligent modems with operating speeds of 2400 to 14400 bps, in a variety of configurations: point-to-point, multi-point, or tandem. And it manages from one to sixteen central site lines, providing enough control for almost any small- to medium-sized business.



NCMS offers a range of diagnostic functions, starting with continuous monitoring of eight key analog parameters, and including EIA lead status.

For measurement of error rates, NCMS provides analog and digital loopback, with multipoint, end-to-

end, and self-testing. Plus automatic polling tests. NCMS even allows downline loading of modem options for easy installation and control.

Continuously monitoring the communications network, NCMS automatically alerts the system operator to problems, so they can be quickly

identified, isolated and resolved. It also provides multilevel password protection for system security. And to simplify administration, NCMS generates trouble tickets and network management reports.

The NEC Network Control and Management System. The simple solution to complex networking problems.

N500A DSU/CSU



The NEC N500A is a highly efficient Digital Service Unit that operates at rates of 2400, 4800, 9600 and 56,000 bps. By using easily changed interface cards, it supports RS-232C and v.35. It offers both full- and half-duplex operation, and is completely DDS network compatible.

For rapid fault diagnosis, the N500A offers local and remote testing capabilities. In a multi-drop environment, the N500A allows the user to address an individual DSU/CSU for testing from the central site—an industry first.

Also built in is an LCD display for front panel monitoring of equipment status, data rate, and error performance when in the test mode. Seven LEDs indicate EIA status.

The N500A is available in both stand alone and card versions for Rack Mounting.

The New N500A DSU/CSU offers advanced technology and rapid, reliable data transmission for the most efficient, most cost-effective system operation.

N2420/30 DIAL MODEM



The NEC N2420/30 Modem offers full duplex operation at 300 bps, 1200 bps, or 2400 bps over two wire DDD networks. For the first time, the user can specify performance options.

- Full Hayes auto-dial compatibility.
- 12 number NEC dialing with auto log-on sequences.
- Call-back security with capability for storing 96 users' codes and passwords.
- Built-in Error Control for error free data transmission.
- Synchronous dialer.

The N2420/30 modem is available in both stand alone and rack mount versions.

The NEC N2420/30 modem offers the user the ability to pick and choose performance options to meet specific telecommunications needs now and in the future.

DSP9620 DATA MODEM



The new NEC DSP9620 employs the latest in high-density LSI technology, and offers stable, reliable operation at speeds up to 9600 bps.

The auto-answer DSP9620 is compatible with CCITT v.32, v.28, v.24 and EIA RS-232C standards, and operates in full-duplex mode over the 2-wire public switched dial network or on unconditioned 2-wire leased lines. It maintains both high transmission speeds and data integrity by employing an array of innovations, including a powerful echo canceller, automatic adaptive equalization and Trellis encoding/Viterbi decoding.

The DSP9620 makes operation simple. It provides automatic fallback, easy setup, comprehensive monitoring, and a full range of diagnostics. It features eye pattern output. Plus an optional adapter for asynchronous operation.

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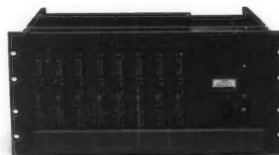
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PRODUCT LINEUP

| PRODUCT LINEUP | | | Data Rate | | | | | | | |
|-----------------|---------------------------------------|------------------|-----------------|----------|---------------------|----------|---------------------|-----------|-----------|---------|
| | | 300 b/s | 1200 b/s | 1800 b/s | 2400 b/s | 4800 b/s | 9600 b/s | 14400 b/s | 19200 b/s | 56K b/s |
| Dial-Up | Half Duplex | | N202SR | | N201CR | N481D | DSP9610R | | | |
| | Full Duplex | N103J N113C/R | N212AR N1220 | | DSP2420 | | DSP9620 | | | |
| | Full Duplex w/Dialer | | N212BR | | DSP2430 N2420/30 | | | | | |
| | • w/Hayes Dialer | | N1230 | | N2420/30-H | | | | | |
| | • w/Security | | | | N2420/30-S | | | | | |
| | • w/NEC+ Hayes Dialer | | | | N2420/30-HN | | | | | |
| | • w/Sync Auto Dialer | | | | N2420/30-Y | | | | | |
| Leased Line | • w/Security & Error Control | | | | N2420/30-SE | | | | | |
| | • w/NEC+ Hayes Dialer & Error Control | | | | N2420/30-HNE | | | | | |
| | Standard Product | | N202T | N202T | N201C | DSP4800 | DSP9600 DSP9600M | DSP14400M | DSP19200M | |
| | Rapid Polling | | | | | DSP4800R | DSP9600R | | | |
| | NCMS Network Control | | | | SPN2400 | SPN4800 | SPN9600 SPN9600M | SPN14400M | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Digital Service | 2400/4800/9600 bps | | | | N500A | N500A | N500A | | | |
| | 56K bps | | | | | | | | | N500A-H |

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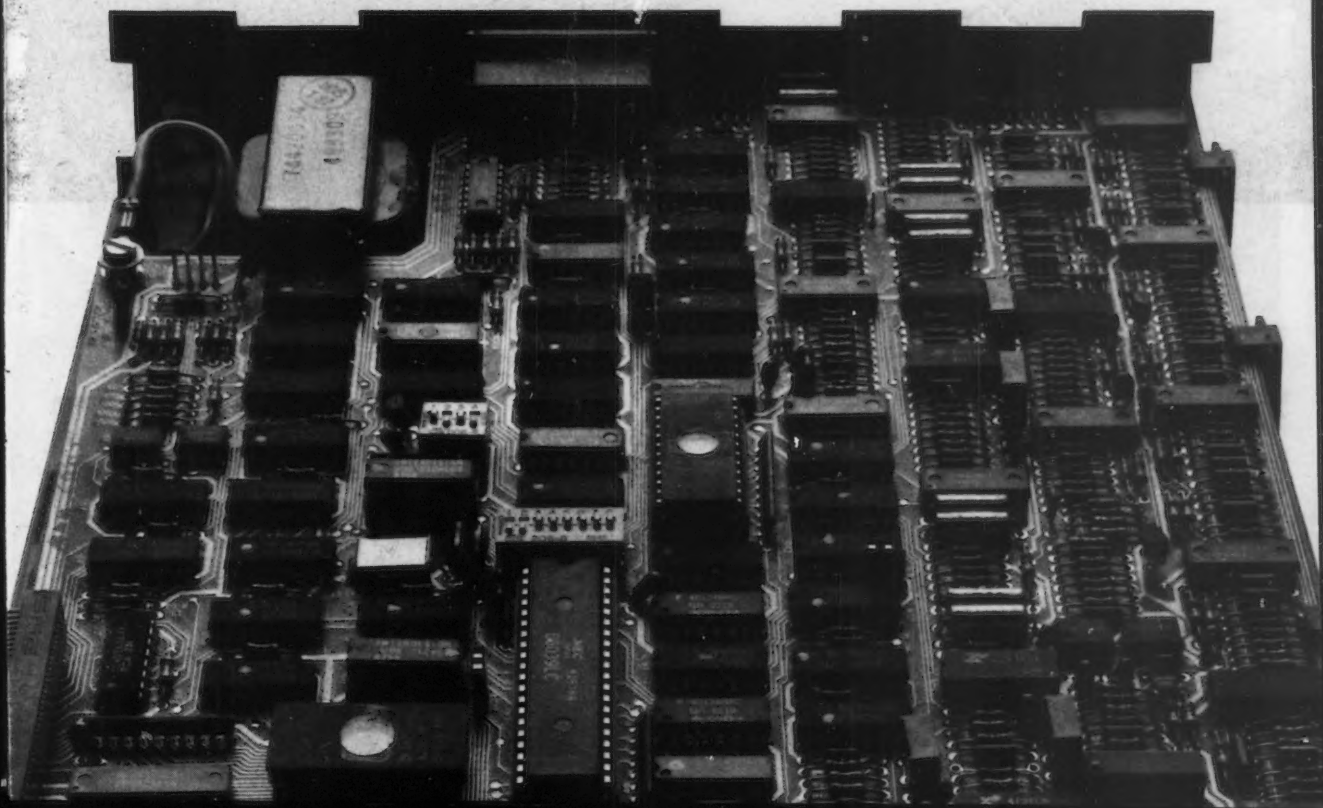
Who needs 2,400 bit/sec. modems?

If transactions and line time are brief, you don't. But for graphics, electronic mail and lengthy file transfers, a faster modem may produce savings in a few months.

By Dale Walsh

The new 2,400 bit/sec. dial-up modems, designed to double the speed of asynchronous communications for the wide base of 1,200 bit/sec. modem users, have quickly established themselves in the marketplace. Because the price has not doubled, the faster modems have been easily cost-justified, and vendors have supplied all the hardware niceties to make the upgrade a smooth one. Complaints are rare.

Customer satisfaction is characterized by comments that the modems perform well, with none of the anticipated compatibility problems, across AT&T's U.S. telephone network. The most successful of the new products not only shine at 2,400 bit/sec. but also outperform their best-known AT&T 212A-compatible predecessors at the fallback rate of 1,200 bit/sec., providing better line quality, easier connections and fewer errors.



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IN DEPTH/2,400 BIT/SEC. MODEMS

At this point, MIS and corporate DP micro managers contemplating new purchases or upgrading are no longer faced with an unproven class of products. The 2,400 bit/sec. service is expanding continually among the public information services and data networks.

Approximately 500 electronic bulletin board services presently use 2,400 bit/sec. modems, and the number is growing by more than 40 per week. Now is the time to give these products serious consideration.

The price of speed

Since the 2,400 bit/sec. devices fit easily into a 1,200 bit/sec. environment, many purchase decisions will center on cost justification. A cost/benefits analysis for high-speed modems should include these factors:

- Types of communications applications, current and planned.
- Overall performance improvement offered by 2,400 bit/sec. modems.
- Ease of transition.
- Tenure of a 2,400 bit/sec. communications standard.

For most applications, moving up to 2,400 bit/sec. yields a significant saving just on the basis of lower telephone line costs, since throughput increases substantially. The amount of the saving depends in part on distance and frequency of telephone line usage as well as type of application.

In some interactive applications where transactions (and therefore line time) are brief or where lengthy data base searches are conducted unaffected by transmission rate, savings are insignificant. But for applications that involve lengthy data transfers, the higher speed results in considerable saving, and the modems can quickly pay for themselves.

High-traffic transactions are typified by the distributed office information network and its periodic report traffic — some daily, some weekly. The sales staff reports to warehouse, inventory to operations, engineering to inventory and so on.

Applications similar in traffic volume include long-distance budget and project monitoring and electronic mail. Any corporation relying heavily on this type of communications would be a good candidate for the 2,400 bit/sec. environment.

For these users, reductions in connection charges will probably be about 30%. Users should not anticipate a straight 50% saving; although the data transmission rate is doubled, other factors, such as the time it takes to type in responses, remain the same. A firm paying \$1,500/mo for long-distance data transfers might save \$500/mo.

There is an additional opportunity for corporations with a large number of micro users who daily download information from external sources and services such as Dow Jones News/Retrieval or Compuserve, Inc. At the higher speed, users can expect to realize dollar savings in service connect charges, over and above line charges.

Some external services have direct 2,400 bit/sec. access, while others such as MCI Communications Corp.

”
For applications that involve lengthy data transfers, the higher speed results in considerable saving, and the modems can quickly pay for themselves.

MCI Mail are available for 2,400 bit/sec. transactions through Tymeshare, Inc.'s Tymnet. (Compuserve will introduce direct 2,400 bit/sec. access this month in a limited number of cities.)

Users can expect most 2,400 bit/sec. services to bill a surcharge, so it is important to check that the additional charges don't offset the cost benefits of the higher speed. Source Telecomput-

ing Corp.'s Source, for example, offers 1,200 bit/sec. service for 43 cent/min during prime time and 18 cent/min during nonprime time. Its 2,400 bit/sec. service costs 3 cent/min more in prime time, 2 cent/min more during nonprime time. MCI Mail charges an added 5 cent/min.

Figuring a payback

The estimated connection charge savings figured against purchase costs will

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IN DEPTH/2,400 BIT/SEC. MODEMS

tell users when to expect a payback. Single-unit list prices for 2,400 bit/sec. modems range from \$700 to \$900, with a median list price of about \$775. For comparison, single-unit list prices for 1,200 bit/sec. modems range from \$300 to \$550, with a median list price of about \$450.

Actual volume prices and street prices, of course, are lower for both groups. In general, it is safe to assume an incremental cost of \$200 more per unit for 2,400 bit/sec. modems than for 1,200 bit/sec. modems.

Note that this discussion has been limited to point-to-point, terminal/microcomputer applications on standard telephone lines. It has also been limited to those "intelligent" 2,400 bit/sec. modems that implement the Hayes Microcomputer, Inc. 1,200 bit/sec. "AT" command-oriented protocol.

In the end, some monetary savings — however real — cannot be measured in dollars and cents for a cost/benefit analysis, yet it must be included in the decision. Higher speed is a boon when swift retrieval of information is crucial to client negotiations, whether the client is on the scene or on the phone. Slow response time can account for lost sales from time to time, and a faster modem may make the difference.

Because it's there

True to human nature, there may be pressure from end users to upgrade just because the higher speed is available. Many people have observed that micro users are speed addicts, and in general there is an urge within us to move fast even when we spend most of our time at stoplights.

On the other hand, satisfying those who do most of their work in front of a computer or terminal screen may be reason enough to upgrade to the higher speed modems, without resorting to a specific cost/benefit analysis.

With graphics transfer and remote word processing in particular, end users must wait approximately twice as long for screens to fill at 1,200 bit/sec. Working at the higher speed ensures greater productivity and user satisfaction.

The higher speed should not be viewed as a radical departure from the norm so much as the logical next step. There is, for example, a steady migration to 2,400 bit/sec. modems among Fortune 1,000 companies whose micro-to-mainframe links also carry heavy traffic for reports, data base file retrieval, program uploading or downloading.

TRW, Inc., for example, is using 2,400 bit/sec. modems in its Information Processing Network to set up a Tele-

phone Gateway Interface. The network provides internal data base access for TRW's CRT and micro users as well as for commercial and military links.

Users line up

Users at General Electric Co.'s Lighting Business Group in Cleveland use 2,400 bit/sec. modems to dial up information services such as The Source and, through a digital switch, to connect at 2,400 bit/sec. to 58 VAX

computers, two IBMs and a Honeywell. Other organizations are expressing interest in rack-mounted 2,400 bit/sec. modems.

The emerging standard for 2,400 bit/sec. modems

”

A legitimate concern for prospective buyers is how soon 2,400 bit/sec. communications may be surpassed by even higher transmission rates.

eases the transition for current users of 1,200 bit/sec. modems. The standard combines three familiar features. The first is the international V.22bis signaling scheme for asynchronous transmission

at 2,400 bit/sec. All 2,400 bit/sec. dial-up modems currently manufactured in the U.S. are compatible with this standard. The cooperation among manufacturers in this regard has smoothed migration considerably.

The second is shared by most, but not all, of the 2,400 bit/sec. modems. The de facto standard at 1,200 bit/sec. is the command-oriented "AT" command set protocol. Compatibility with this established standard is key for

HOW TO MAKE A GREAT IMPRESSION AT THE OFFICE

IN DEPTH/2,400 BIT/SEC. MODEMS

the 2,400 bit/sec. units as well. The third is fallback to the AT&T 212A standard, defined in V.22bis, and optional fallback to the AT&T 103 standard.

Higher speed waiting?

A legitimate concern for prospective buyers is how soon 2,400 bit/sec. communications may be surpassed by even higher transmission rates. Clearly, the 2,400 bit/sec. rate will be the prevailing upper standard for three

to four years.

It will be at least that long before affordable faster modems are available for the installed 2,400/1,200 bit/sec. user base. A major reason is the market's relationship to modem technology.

It helps to think in terms of three classes of autodial modems: 300 bit/sec., 2,400 bit/sec. and below, and 4.8K bit/sec. and above.

At 300 bit/sec., users can read faster than the data arrives on the screen. While

this may once have been useful, the rate is unacceptable for today's processor users.

A rate of 1,200 bit/sec. is more acceptable to modern computer users, although 2,400 bit/sec. is still preferable, both from connection cost and user satisfaction points of view.

Manufacturing view

From a manufacturing viewpoint, the 2,400 bit/sec. modems have much in common with the 212A-type

(1,200 bit/sec.) modems that are standard in this country. In particular, the signaling rates and filter systems are similarly made. Hence, their development and production are not a great added expense, making them easily cost-competitive with the 1,200 bit/sec. products on the market.

However, the move to 4.8K bit/sec. and above is a quantum leap. The 9.6K/4.8K bit/sec. modem standard, V.32, requires a design

that is approximately 64 times as complex as the 2,400 bit/sec. units in terms of multiplications per second and bits of arithmetic.

In addition, V.32 in its present form does not fit well in the U.S. communications environment. Eventually, if V.32 takes off in the U.S., the result will be a "multimodem" version that falls back to the existing modem types, including 2,400 bit/sec. modems. In any case, low-cost units at these speeds are still far down the road.

A good investment

At this point, no statistically valid study has been published that examines 2,400 bit/sec. modem performance. A limited user survey indicates, however, that users can expect performance (block error rate, for example) of these modems to be as good as that of 212A-type (1,200 bit/sec.) modems.

Based on their experience with other types of hardware, many users would expect lower speed modems to perform better than higher speed modems in terms of error rates. But in this case the adaptive equalization techniques in the new modems largely offset the difference.

In addition, performance at the fallback rate of 1,200 bit/sec. is demonstrably better than the performance of current 1,200 bit/sec. modems and for a relatively small difference in price. The incremental cost of 2,400 bit/sec. modems may prove to be insignificant when compared with the benefits of higher speed, lower connection charges and improved fallback ability.

For existing user bases, the bottom line is that 2,400 bit/sec. modems deliver twice the speed of 1,200 bit/sec. units without any loss of already-installed capabilities. Those applications that will benefit the most involve lengthy file transfers or the repeated filling of screens. Interactive applications are harder to justify in cost-savings terms, although user satisfaction may be a decisive factor.

For new installations, the savings in connection charges and improved performance afforded by the 2,400 bit/sec. modems, at costs that are fairly competitive with 1,200 bit/sec. products, mean that for many, this is the way to go. For most applications, the accrued benefits from reduced connection charges make the 2,400 bit/sec. modems an excellent investment.

About the author

Dale Walsh is director of research at USRobotics, Inc., Lombard, Ill. He chaired the U.S. Modem Working Party, a committee of U.S. Study Group D, from 1980 to 1985.

With the Hewlett-Packard LaserJet Printer.

Page 2
1985-86 Marketing Report

indicating a lower overall risk than had originally been projected.

Market Penetration

Since introduction in 1976, the product has experienced tremendous growth in all geographical areas. In fact, the only quarter-to-quarter exception occurred Q1-Q2 1980, when the rate of penetration stalled as a result of the \$35 coupon offered by the leading competitor (See Fig. 2a).



Figure 2a. Market Penetration (all geographic areas)

All regions are contributing to this growth, especially the Southern Region, which is experiencing a growth in market penetration far greater than the industry average. In the last three quarters, the Southern Region has increased at a rate twice that of the same period in the previous year. Figure 2b compares Southern Region and overall company performance with industry growth rates.

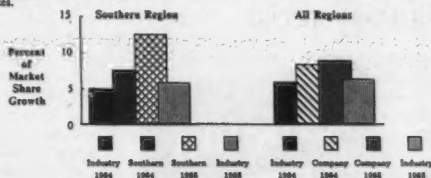


Figure 2b. Market Growth Rate Comparisons

This would indicate that the increased effort directed at the dealers in the South has proved successful. No other elements were altered.

Impact on Profitability

After expenses for the new dealer program, profits have increased 29% in the Southern Region. In the other regions, profits have held steady. This indicates that the ROI for dollars allocated

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IN DEPTH

Report from Japan:

13 Teleministers in Search of Teletopia

By C.P. Lecht



A Computerworld columnist travels to Tokyo and wonders: What joint ventures are imminent, what global communications possible? And why was John Opel really speaking at International Symposium '85?

When I first heard about International Symposium '85 (IS-85), I suspected it was going to be more than a run-of-the-mill industry event. For one thing, IBM Chairman John Opel was to speak. Certain that he wasn't in need of a speaking invitation, I wondered why he accepted this one — in Japan.

And why wasn't Charles Brown, AT&T's chairman, present? The company sponsoring the symposium, Nippon Telephone and Telegraph Corp. (NTT), is Japan's AT&T; the speakers hailed mostly from the communications industry; and the theme — "Telecommunications: Today and Tomorrow" — was more in Brown's line than Opel's.

IS-85 occurred at a time when the U.S. Commerce Department, on behalf of the U.S.' largest electronics companies, was putting the heat on the Japanese for alleged trade mischief in the international computer and communications marketplace. The symposium promised to offer one of those moments when someone calls a time-out, and a group of quarreling, even combative, contestants agrees to sit down and listen to one another's points of view.

IS-85 brought together 13 industrial, political and educational leaders from around the globe to express their views on today's world of computer and communications technologies and how they envision tomorrow's world might be.

The formal agenda was not the only one under discussion; there were many hidden agendas as well. Were the companies looking one another over for possible joint ventures? Who would be the next deregulatee?

Three months after IS-85, one can see some of the moves hinted at taking shape. The signs point to the following conclusions:

- Hitachi Ltd. will follow the examples being set by Fujitsu Ltd. and NEC Corp. and pick a partner — McDonnell Douglas Corp.'s recently acquired Tymeshare, Inc..

- The Mitsui group will align with AT&T's operations, selling and using AT&T's NET 1000 programmable network service.

- The Mitsubishi group will link with IBM, selling and using the Information Network.

But these alignments tell only part of the story. The big question is, who will NTT choose as its U.S. partner, if anyone? I say it will be IBM. Why else would John Opel travel to Tokyo to speak at an NTT conference? IBM and NTT have been conducting joint research for two years on a conversion system between IBM's Systems Network Architecture and NTT's Digital Communications Network Architecture that will be announced in December.

It appears IBM and NTT will form nothing more or less than a joint venture in Japan. Together they will rule that country's computer

and communications industry. For a long time to come, they will be the most powerful industrial force on the globe.

The 13 speakers at IS-85 were the ministers for Post and Telecommunications (PTT) of Japan, France and West Germany; the chairman and chief executive officer of three companies — Bell Canada, British Telecommunications plc and NEC Corp.; the chairman of IBM; and the presidents of NTT and Bell Laboratories. Also present were the secretary general of the International Telecommunications Union; two educators — the senior adviser to the rector of the United Nations University and a professor of engineering from Tokyo University; and NTT's executive vice-president, the man who had organized the affair.

As the conference began, Japanese- and English-language papers were carrying stories of the seemingly endless international trade negotiations taking place in Tokyo and Washington, D.C. Headlines repeatedly featured the tough talk of one U.S. politician or another, and accompanying articles told of the consequences if some party — presumably the Japanese government — didn't clean up its act.

The Semiconductor Industry Association (SIA), was preparing a lawsuit, which it later filed, to stop Japanese imports from flowing freely into the U.S. The association was

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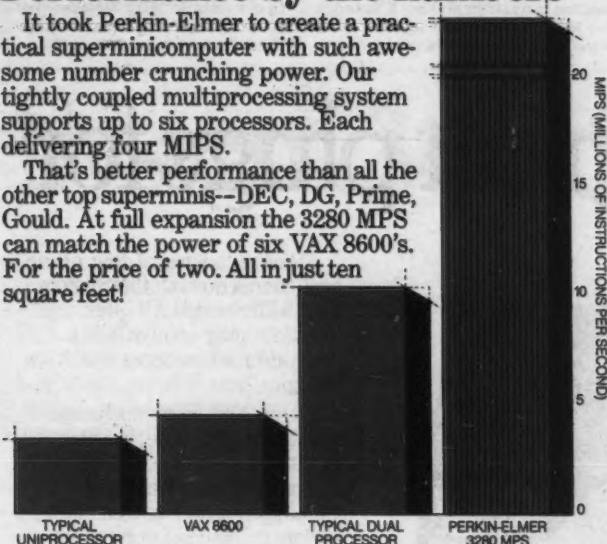
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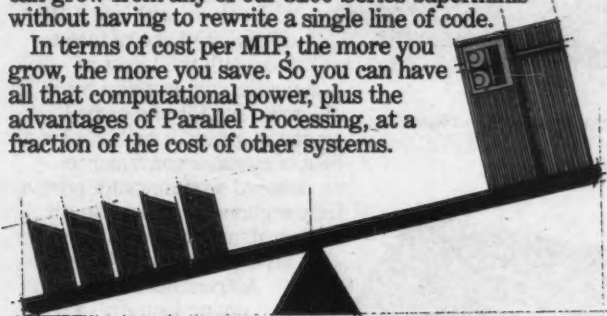
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blaming its members' ills on some sort of conspiracy by Japanese companies, aided by their government. One legislator recommended an old-fashioned boat blockade to prevent America's apparently insatiable appetite for goods manufactured in Japan.

Turning Japanese

Meanwhile, IBM was shifting more of its mid-range systems production to Japan and increasing its development of large systems there as well. Employing more than 20,000 already and doing in excess of \$3 billion in business within Japan, IBM apparently couldn't transfer personnel to Japan fast enough — or for that matter, keep up with building new plants in the Japanese countryside.

Texas Instruments, Inc. (not an SIA member) was increasing its semiconductor production in Japan and transferring personnel there from

PTT said that Japan, and presumably all nations, were moving away from an industrialized society to one "which permits access at all levels, individual, corporate and governmental, to the information flow."

Did he mean that free access to information was not possible in an industrialized society? Whether his statement was a sociopolitical one — meaning that information was restricted out of necessity — seems far less likely than that it was just a simple observation of the times.

Sato pointed out that NTT's role as a communications company would change dramatically now that its deregulation had been accomplished as of April 1. Previously, its main occupation had been eliminating telephone application backlog and handling service. Unlike AT&T before deregulation, NTT was prohibited

from actually manufacturing anything. Now it is to become a full-fledged design, development and manufacturing organization while it continues, for the time being, to operate most of Japan's communications facilities.

While Sato specifically referenced "telecommunications" as NTT's business, this term means the computer systems business, too. Today the two are inseparable.

Teletopia

He spoke of Japan's new telecommunications plans for creation of a "teletopia," — "a highly information-oriented society linked nationally, and in the future internationally, through the introduction of communication infrastructures such as the two-way CATV and Captain systems." Thus, he emphasized his

country's conversion to a society in which the barriers preventing access to information would be dismantled, replaced by high-speed telecommunications pathways.

The speakers preceding John Opel spoke of their hopes for the future. The IBM chairman addressed current times, injecting realism into the symposium. His point was that aspirations may not be realized if current problems in international cooperation were not overcome. Coming from America's highest high-tech envoy, this message served as a reminder that what was happening in the home countries of all in attendance was not that supportive of the intentions and goals of those within the conference hall.

Opel's remarks were not devoid of hope. He observed that the merging of the information processing and



Sato

places like Texas and Hong Kong. Motorola, Inc., the company authoring the full-page ads entitled "The Japanese Challenge," was buying up a storm in Japan.

In all the furor, no one seemed willing to state the obvious — namely, that Americans are not forced to buy Japanese products or to manufacture their own in Japan. In fact, the imbalance in the trade statistics offered is weighted with numbers generated by U.S. companies "exporting" their products manufactured in Japan.

Astonishingly, according to official U.S. and Japanese commerce department statistics, the total U.S. exports to Japan by U.S. companies plus the products manufactured by U.S. companies in Japan and sold there are roughly equal to the sum of Japanese exports to the U.S. by Japanese companies plus the products manufactured by Japanese companies in the U.S. and sold there.

Few seemed disposed to notice that it is illogical to presume that a smaller country should buy as much from a larger one as the latter may buy from the smaller. Or is Japan a special target? The net balance of trade between the U.S. and Canada favors Canada by more than a billion dollars per year, a fact rarely in the news. Japan-bashing is in vogue.

Inside the IS-85 conference hall, Teleminister H.E. Megumu Sato spoke on, "Toward the Realization of the Highly Advanced Information Society — The Telecommunications Policy of Japan," The minister of

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communications industries "is creating a new era of technological progress to help with the world's work" and that it holds enormous promise. The realization of this promise will be directly influenced by "how national governments approach the public policy question of regulation vs. free market competition," he said. "International competition offers the best hope for the end user as the information era unfolds."

The teleministers from France and West Germany voiced identical out-of-touch-with-the-times viewpoints. Not unexpectedly, French Teleminister Louis Mexandeau spoke of achievements: "In France, digitalization and integration of networks have already enabled the offering of many services which herald the information society of the 21st century." Then he catalogued all the

things left to be done.

Christian Schwarz-Shilling talked of starting to do in Germany what his French compatriot claimed had already been done in France. Then he also spoke of problems yet to be overcome.

Together, the two presented viewpoints of a vanishing breed of politicians who felt that today's world hadn't really changed — that it was

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Foreign companies wishing to enter the U.S. and avail themselves of AT&T's facilities while they are here may find it more than convenient to play ball with AT&T at home first.

just a matter of changing polemics or, should I say, speechwriters. Rather than offer views on how their countries intended to cope with change, they spoke of the new era as if it were nothing more than the result of historic necessity.

Universal information

The conference offered refreshment in the remarks of Teleminister

Ian M. Ross, president of AT&T Bell Laboratories. His speech, "U.S. Telecommunications and the Evolution of Universal Information Services," portrayed vividly what was happening in the AT&T world of telecommunications.

After achieving its goal of offering universal telephone services to U.S. customers, AT&T is now targeting its resources toward the realization of universal information services. This system would allow customers everywhere to access any kind of voice, data or image service in any place, at any time, with maximum convenience and economy. This is a new ball game for AT&T; until it was deregulated in January 1983, it did little of its \$75 billion-a-year business abroad.

Since many countries are now deregulating their communications industries and allowing foreign competition, AT&T, the first deregulatee, will doubtless throw its hat into the international ring everywhere it can. And AT&T will do much better than most people surmise, even at roughly half its former size.

Foreign companies wishing to enter the U.S. and avail themselves of AT&T's facilities while here may find it a bit more than convenient to play ball with AT&T at home first. In fact, since AT&T is IBM's largest customer, it could not have escaped the attention of foreign high-tech companies that playing ball in AT&T's field on its side might bring even greater rewards than those obtainable by achieving mere customer status. As the symposium was taking place inside the conference hall, Fujitsu was wooing AT&T outside of it. AT&T is Amdahl Corp.'s biggest customer; Fujitsu owns 47% of Amdahl.

Teleminister Ross also spoke about the new technologies AT&T was working on in microelectronics, software and photonics. He presented his views of industry trends, emphasizing systems networking and integration, the deployment of stored program-controlled systems, computerized programmable digital networks, projected increases in packet and wide-band packet-switching systems, light-wave transmission allowing for increases in information-carrying capabilities, a growing use of software-based services provisioning (and we can only assume software provisioning, too) in the networks and greater customer control over services facilities.

Universal information services would be achieved, Ross said, in three stages: the development of overlay networks; the achievement of a true Integrated Services Digital Network (ISDN) that featured integrated access to the overlay networks (voice, data and image); and the provision of integrated access and transport systems with dynamic bandwidth allocation to permit large-scale network sharing by many different services.

If anyone on this globe deserves the title of teleminister, Koji Kobayashi — chairman and chief executive officer of NEC Corp. — does. His international outlook is unparalleled. Intensely loyal to his homeland, yet understanding and sympathetic to others, he is at once a scientist, philosopher and businessman. He is a true samurai — knight of all that counts.

Kobayashi began his talk, "Toward an Information Infrastructure Connecting the World," by stripping

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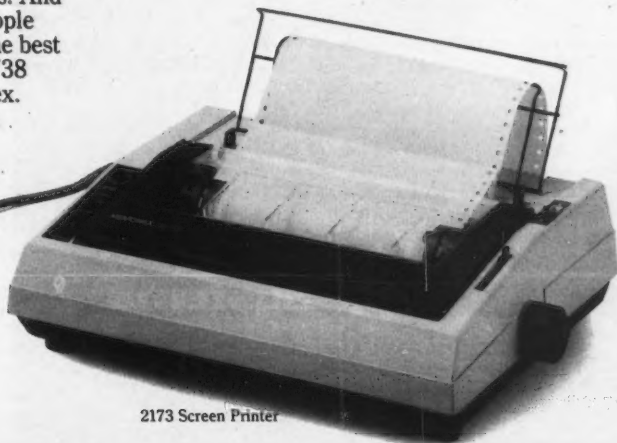
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Kobayashi, left, with the author

himself of titles, saying simply, "My name is Kobayashi." He moved swiftly to talk about NTT's step into the competitive communications world.

He congratulated NTT and offered his best wishes for their future. He may have been thinking, "They'll need such wishes now that NEC is able to compete with them head-on."

NEC is a formidable rival in the newly deregulated Japanese marketplace. Like

Fujitsu, NEC is expected to align itself with a U.S. company to exploit the opportunity. In this case, it will be General Electric Co., with its long-established ISDN embryo, General Electric Information Services Co. (Geisco).

Modern communications

Kobayashi went on to say he was reluctant to apply the word "modern" to communications and that he'd done so the first time at an MIT alumni meeting in 1983. He

defined modern communications as the combination of computers and communications — "C&C" is NEC's equivalent of NTT's Information Services Network and AT&T's ISDN. All mean networks imbued with intelligence. There is no doubt that his company is racing to gain part of the ISN/ISDN marketplace in Japan and wherever else it can under the C&C slogan.

Kobayashi separated the communications world into three parts — information delivery, generation and storage — then noted that modern communications meant the integration of all three in a configuration capable of handling a world of multimedia. His was another way of describing the world spoken about by his predecessor, AT&T's Ross.

Noting that his idea of a truly modern communications environment was indeed a difficult one to describe because of its multilayered, multifaceted nature, Kobayashi said that he would attempt to do so using a matrix that blocked its functional aspects against its applications environments.

Environmental aspects

The functional aspects were subdivided into three categories: terminals; networks; and information service centers. The first, the one Kobayashi said was most visible to users, would require delicate human engineering in both hardware and software.

The second (the value-added networks, wide-area networks and so on) would be viewed as little more than a black box.

The third, like the first, would have deep user interest. The potpourri of services to be found in the information service centers will span the spectrum of human C&C invention from alarm (less than 10 bit/sec.) to video (billions of bit/sec.) and everything in between — including on-the-fly processing of data into information, teletext, videotex and so on.

A basic human right

Kobayashi divided the applications environment into three sectors; public access networks; business networks (NET 100) and home networks (Source Telecomputing Corp.'s Source; for example). He noted that the first could not be overlooked because it constituted the infrastructure that could spell the difference between an underprivileged society and one that was privileged.

He avowed his belief in the inalienable right of people to have open access to information — "a basic human right," he called it — and declared that only the public networks could serve

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the interests of that right. He said the provision of public networks could not be driven by economics alone and that governments had to be responsible for maintaining the high quality of public networks because they constituted infrastructures on which societies must depend for development.

Kobayashi concluded his technical discussion by speaking about the home, the place where individual preferences must be served. ISN/ISDN/C&C (call it what you will) must provide CATV wide-band optical-fiber cables to deliver high resolution to the home for better entertainment; "home work and home security" systems would also be needed.

Kobayashi ended on a note of optimism. He said it was natural for people to want to see and talk to each other and to expect a free exchange of information. There should be no hindrances to this, he said. "The international imbalance of information must be rectified. Language barriers must be broken down by development of telephones that translate conversations on the fly."

If Kobayashi's words were the kind of thoughtful fare we love to hear, those of the Canadian Teleminister Albert Jean de Grandpre were words we cannot bear to hear but must.

Veiled fears

The Canadian teleminister spoke eloquently of his country's plans and those of his soon-to-be deregulated communications company. He outlined the geopolitical and socioeconomic factors that led Canada, a country of vast land areas but small population, to develop one of the world's most technologically sophisticated telecommunications networks.

De Grandpre's words seemed a thin veil over his fears for the future. Countries such as Canada cannot hope to create and maintain a modern communications network without intense international cooperation.

As a country politically divided, burdened with inflation and unemployment and located next to a rich and united neighbor, the future of its communications industries (and thus, computer industries) cannot be judged bright.

The wolf at the border?

The problems Canadians face typify those which most nations will encounter as the new ISDN era emerges. How can a country protect its domestic communications industry from decay if it is located next to a country whose systems are far superior in price/performance? What rationale can a government come up with to prohibit its industry from taking advantage of the cost saving achieved by abandoning its home systems for those of its neighbor? How can a country preserve its own communications systems if its communications revenue must decline as the ISDN technology of its neighbor improves?

As ISDN technology in the U.S. matures to offer every conceivable communications and computing service in increasingly cost-efficient ways, Canadian companies may find the temptation to dash southward to proves irresistible. The automation of U.S.-supported Canadian industry is forcing some Canadian distribu-

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The problems Canadians face typify those which most nations will encounter as the new ISDN era emerges. How can a country protect its communications industry from decay if it is located next to a country whose systems are far superior? What rationale can a government come up with to prohibit its industry from abandoning its home systems for those of its neighbor?

tors to remain on-line because the supplier's information center contains the data that may prove crucial to a Canadian company's ability to win a bid.

With perhaps as much as 80% of

Canadian industry owned by U.S. companies and financial institutions, the Canadian government has little choice but to allow some companies to remain on-line 24 hours a day, in direct violation of laws prohibiting

such connections without special and costly arrangements made through the government-controlled communications company. Canadian companies have been meeting away from the public eye to lay plans to hook up their data processing centers to those of their U.S. suppliers.

For example, Albertan companies bidding against each other for delivery of heavy equipment to a construction site in northern Canada are known to be plugged into the data bases of American firms such as Caterpillar Tractor Co., Ford Motor Co. and Sperry Corp. If data can traverse the lines from south to north, so payments may be electronically transferred from north to south. Once they are in the U.S. networks, Canadian companies cannot help but notice the enhanced services available to them.

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Your Connection to Industry Networks

There are also cases where an industry benefits from the efficient exchange of information.

In the property and casualty insur-

IN DEPTH/IN SEARCH OF TELETOPIA

The U.S. can do little but sympathize with the Canadian government's problems in trying to create a telecommunications policy that prevents the siphoning of much needed revenues. If Canada does allow its industry essentially open communications access to U.S. corporations, it is faced with another problem: How can it control what uses Canadian companies may make of the below-the-border networks?

Canada doesn't have enough Royal Canadian Mounted Police to police the visible border to the U.S.; how can it be expected to police the invisible telecommunications boundary? And should the U.S. be blamed for creating so enticing a communications/computer environment for its own citizens that Canadians are lured away from using their own?

It follows that a country in Cana-

da's position must face a decline in the revenues that derive from its own communications industries. It is not hard to see how this decline could lead to a diminishing capability to create a home-controlled communications system. Without such control, this situation could ultimately lead to the capture of one nation's economy by another — electronically.

One might suspect that many who attended IS-85 were motivated in part by this fear of the future of communications services. They found there that they are not alone.

Tariffs — the bottom line

When Yasuhide Kitahara, NTT senior executive vice-president, offered the locknote address, "INS — Study on Network and Tariff Structure," nothing could have been more

appropriate. Someone had to talk of tariffs, "the bottom line."

He said that an INS pilot plant had initiated service on Sept. 28, 1984 in the suburbs of Tokyo. Another pilot facility began providing service at the Tsukuba Expo '85 science fair. While both were experimental (non-revenue-producing), Kitahara forecast that INS commercial revenue-producing services would be initiated in Tokyo, Osaka, Nagoya and Tsukuba this year.

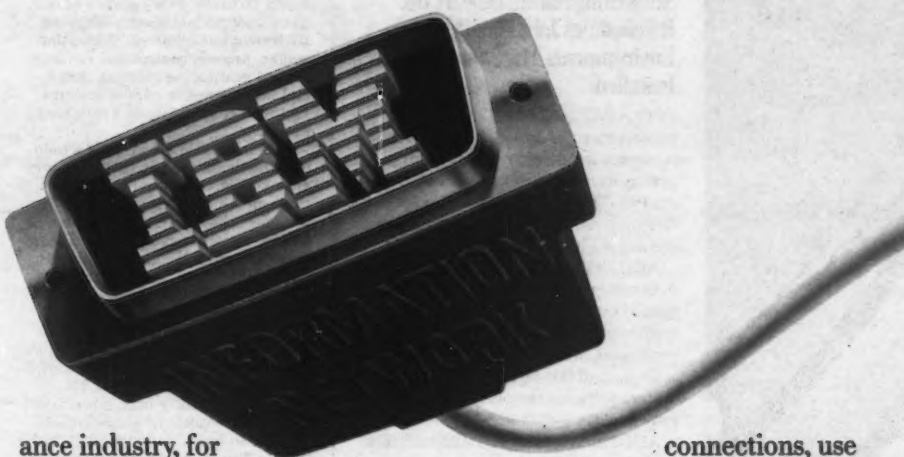
Kitahara presented his company's plans to replace current analog communications facilities, both voice and data, with digital devices. He said this change, along with integrating existing networks, would reduce costs. Thus, an integration of all of Japan's existing telegraph, telephone, telex, data communications and facsimile systems would occur.

Until April 1, NTT was authorized to offer these services as a monopoly.

The cost reductions would also result from the introduction of a bit-based tariff system, fiber-optic communications and a large-capacity satellite communications system. While no one doubts that these three things could indeed yield these identified areas of cost reduction, just how much a reduction might be realized was still under study as was, presumably, the form this might take.

In view of the fact that Japan is now allowing competition in communications, I wonder if we might not see a repetition of today's U.S. scene wherein cost reductions in high-volume data transfer from coast to coast were accompanied by cost increases in local voice and low-volume data transfer.

The symposium brought together 13 teleministers in search of a path



ance industry, for example, the IBM Information Network improves communications between major underwriters and independent agents.

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Kitahara

to the teletopia described by Sato. Only the American and Japanese participants seemed aware of the past, present and future of telecommunications industry. The future of the rest seemed hopelessly contaminated by political unrest, if not just plain hopelessness. IS-85 confirmed my belief that if the world of open access to communications was to survive, its only chance was through American/Japanese leadership.

As I listened to some speakers present the possibility of an Orwellian future instead of a Utopian — teletopian — one, I could not help but wonder if anyone would conclude anything but that the new era of improved communications would offer a positive quantum leap in the quality of life.

Professor Shumpei Kumon spoke of the "games" we may well expect to be played in our coming teletopia — but were these games any different than those currently being played? The players he posited would be "sovereign states," "corporations" and "research teams." According to the professor, either the research teams would win out, or they would so influence the others that all would survive.

Microcosm to macrocosm

The second concurrent session provided a brilliant display of creative thought on how the INS network services would be instrumented. It was also a showcase of NTT know-how. Topics ranged from those in the ISN microcosm — large-scale integration chip technologies to be

IBM Information Network...The Smart Connection

IN DEPTH/IN SEARCH OF TELETOPIA

found in the network infrastructures — to the ISN macrocosm and the design of its structural forms. On the conference hall screens, the embryo of a single globe-girdling computer system was shown.

Imagine a chip. Now imagine a cluster of chips, some alike, others not, but each linked to one or more chips in the cluster by wire and wire-less communications. Further imagine that each of the chips in the cluster is dedicated to fulfilling a specialized purpose, such as providing memory, doing scalar computations, performing device control and so on.

Now imagine a network of such clusters, some as large as you wish them to be, others as small. Imagine a lattice of these networks, some of which vanish into the microscopic world — we cannot see them because

they are too small. Others vanish into the macroscopic world — we cannot see them because *we* are too small.

Now superimpose the requirement that the entire lattice operate according to a set of rules that syn-

"

The underlying principle of an INS/ISDN is nothing more or less than that of a common computer system possessed of uncommon power spread over the country. It is a system that, because of its open-ended architecture, is capable of at least connecting, if not integrating, all the processes we may care to automate with incredible economy of scale.

chronizes its operation to achieve some set of goals. Finally, provide users of the lattice with the means to program it to achieve these goals.

If what I've described seems suspiciously like a computer system as we conceptualize it today, you are

right. But instead of occupying the space available on a desktop or the floor of a room or even that available in a good-size building, its components are more likely to be spread in value-added network form across a city or a state, even a country.

Thus, the underlying principle of an INS/ISDN is nothing more or less than that of a common computer system possessed of uncommon power spread over the country. It is a system that, because of its open-ended architecture, is capable of at least connecting, if not integrating all the homogenous and heterogeneous processes that we may care to automate with incredible economy of scale. The more encompassing the INS/ISDN functionality, the broader its deployment and the more that may be done with it.

That all the symposium speakers envisioned the first applications in their networks as addressing problems that have been unsolvable so far is only natural. Its application in the handling of natural and man-inspired disasters is urgent. But so are the wider application areas, such as helping the hearing impaired, the sightless and others who are severely disabled.

A global lattice

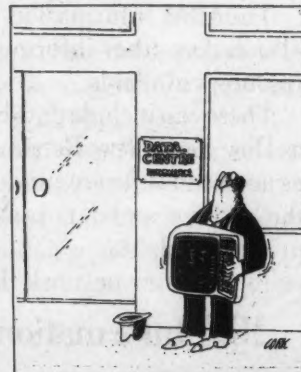
INS/ISDN uses will be extended to touch virtually every corner of our lives. Individual citizens can have their own home-based information center, process control and environmental monitoring systems. Artificial intelligence or expert systems facilities could be made available to everyone.

When capable of carrying a holographic image load, artificial experience systems will emerge, systems through which we may learn by experience, the simulation of which is so real we may never forget its message. The mind boggles at the possibilities INS/ISDN systems may one day offer in their ultimate forms — globe-girdling lattices.

That AT&T did not initiate JS-85 may indicate what is lacking at home and contributing to the U.S.' international trade deficit problem. Of course, it may have been more difficult in these times to get Teleminister Opel to speak in Bedminster, N.J., than in Tokyo. And without Opel, would men like Kobayashi have come?

About the author

Charles P. Lecht is chairman of Lecht Sciences, Inc., a New York-based think tank specializing in computer and communications technologies. He is a regular Computerworld columnist.



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MICROCOMPUTERS

Graphics software debuts

Adds free-form visuals to Graphwriter, 1-2-3

Software for the IBM Personal Computer that reportedly expands the capabilities of other business graphics programs and permits nonartists to add free-form visuals into charts and graphs has been introduced by Graphic Communications, Inc., of Waltham, Mass.

The package, Freelance, reportedly includes more than 200 predrawn symbols that can be used to construct diagrams, flow charts, maps and other customized graphics. The program can also create and store symbols such as company logos.

Freelance runs on the IBM Personal Computer line and reportedly can be used to enhance graphics created with either Graphic Communication's Graphwriter package or Lotus Development Corp.'s Symphony or 1-2-3 packages. It may also be used as a stand-alone graphics product.

Using Freelance, word charts reportedly can be created directly on the screen or imported from word processing programs as Ascii files. Words can reportedly be combined with charts, illustrations and symbols as well.

Also included are custom grids, rules and drawing tools. With those tools, shapes can be moved, replicated, rotated, sized and edited for color, location and individual line points, Graphic Communications said.

Freelance, priced at \$395, reportedly supports a variety of printers, including the Epson America, Inc. FX-80, MX-80 or RX-80 and the Hewlett-Packard Co. Laserjet. Among the plotters supported are the HP 7470, 7475 and 7550A. Several 35mm slide recorders are also supported, including the Polaroid Corp. Palette.

Freelance requires a Personal Computer with at least 256K bytes of memory and either an IBM Color Card, IBM Enhanced Graphics Adapter or Hercules Computer Technology Co. Graphics Card.

Net version of business series out

Offers supports for five IBM PC Network users

IBM's Information Systems Group in Rye Brook, N.Y., has introduced a local-area network version of its Business Management software series for the IBM Personal Computer.

The Business Management series Local-Area Network Access Edition reportedly supports up to five users sharing programs and files on the IBM PC Network. It also monitors concurrent tasks and notifies users of conflicting requests.

The network version of the software reportedly supports applications for general ledger, accounts payable, accounts receivable, payroll, order entry and invoicing and inventory accounting.

A single Business Management series application license is required for the network's server micro, and a license is required for each of up to four remote micros.

The server must be a Personal Computer XT or AT with 640K bytes of memory, a double-sided, double-density diskette drive, an 80-col. monitor, an IBM PC Network adapter card and a compatible printer supporting 132 characters per line.

Each additional Personal Computer, Personal Computer XT or AT requires 512K bytes of random-access memory, one double-sided drive, a network adapter card and a monitor. The network version of the software also requires an IBM PC Network Translator Unit. Both the server and remote micros must run PC-DOS 3.1 or higher and the IBM PC Network Program software.

A license for each remote micro costs \$245. Each of the six Business Management series programs costs \$695.

■ Microsoft introduced document design software for the Apple Computer Macintosh/80

■ Texas Instruments enhanced its Personal Consultant software/61

■ Benchmark software for facility maintenance was unveiled by Rantac/61

■ A new version of Uniform Software's The Connector debuted/64

INSIDE

Software/64

Board ties AT&T, IBM micros

By Edward Warner

MORRISTOWN, N.J. — In a move that could at last bring a plethora of IBM Personal Computer software to the software-starved AT&T Unix PC, AT&T's Computer Systems Division announced that it will exclusively market a board that gives the Unix PC IBM compatibility.

The board, developed by Alloy Computer Products, Inc., includes an Intel Corp. 8086 microprocessor, the same as that used in the AT&T 6300 personal computer. The 6300 is not fully IBM compatible, however, in part because of differences between the 8086 and Intel's 8088 microprocessor, which powers the IBM machine.

The DOS-73 board's 8086 would override the Unix PC's Motorola, Inc. 68010 processor to permit the machine to run such IBM-compatible software as Lotus

Development Corp.'s 1-2-3 and Symphony, Computer Associates International, Inc.'s Micro Products Division's Supercalc3 and Multimate International Corp.'s Multimate word processor. AT&T said the board will be available in the fourth quarter of this year but did not announce a price.

Dealers said the Unix PC has been experiencing sluggish sales, largely because of the lack of Unix software available for it. An AT&T spokesman, however, said that he was unaware of sales problems with the machine and denied that the machine was in need of additional software. He also denied that the DOS-73 board marks AT&T's capitulation to the world of IBM compatibility. Alloy, of Framingham, Mass., develops and markets tape backup units, storage subsystems and expansion devices for personal computing.

Micro users groups provide freewheeling information

By John Vacca
Special to CWT

Users groups, a feature of the DP landscape since the early mainframe days, have changed somewhat in recent years. Where once they were supported primarily by large corporations — such as IBM's Guide and Share and Burrough Corp.'s Cube — now they also exist for those working with personal computers. Where the large groups were once noted for the parade of vendor representatives and attendees passing through them — all with limited social contact — the microcomputer-focused groups are providing a freewheeling exchange of information and advice between members and sometimes the vendor.

Like a wagon train in the days of the old west, the microcomputer users groups permit members to pool their resources while gaining protection from the hazards of their journey. The groups can help members identify the programs they seek and

alert them to potential problems and clinker products.

There are many different types of users groups, but all are either formal or informal. The formal groups, such as Guide, commonly support large

99

The group's purpose should be adhered to, explicit and written down. Purposes and goals have a tendency to change unless they are well documented.

mainframe organizations. Informal groups, meanwhile, largely focus on personal computing and consist of local and special interest groups, both of which have enjoyed enormous success.

Though microcomputer users groups are popping up and thriving everywhere, all must meet certain requirements to succeed in such new and

uncharted territory. Among those requirements are a stated purpose, group understanding of that purpose, a leadership structure, an orientation and a sensitivity to the attention span of members.

There are, no doubt, other guidelines that the group should follow, including the issuance of publications, the receipt of nonprofit status, the acceptance of donations, the gaining of a meeting place and establishment of relationships with vendors. However, for a users group to be successful, it should first follow the five guidelines cited above.

The first guideline, maintaining the group's purpose, is essential. The group's purpose should be adhered to, explicit and written down. Purposes and goals have a tendency to change unless they are well documented.

The second guideline, that all members understand and agree with the group's purpose, means that the purpose should arise out of group consensus. It also means that written goals and guidelines should be distributed to newcomers.

Meanwhile, a leadership structure that reflects a group's purposes and size should be created. Most users know that leaders require and appreciate

Continued on page 66

Vacca is a writer and consultant on information management and computer security. He also serves as Planning and Design Coordinator for the Federal Home Loan Bank in Topeka, Kan.

MICROCOMPUTERS

Firm offers graphics aid

Business & Professional Software, Inc. has introduced its 35mm Express software for the IBM Personal Computer line and AT&T 6300 personal computer.

When used in conjunction with either a Polaroid Corp. Polaroid Palette slide film recorder or the Magi Advertising Group's Magicenter network of service bureaus, the software permits users to produce slides of business graphics, according to the vendor.

Charts created using the software may be drawn in two or three dimensions, according to the Cambridge, Mass., vendor.

Multiple images may be displayed on one slide. Line, pie, adjacent or

stacked bar, area and tabular charts may be created.

User-specified elements

Users are also said to be able to specify a chart's color, font size, spacing and highlights such as drop shadows.

The software reportedly features an icon-based menu and supports the IBM Graphics Printer as well as the Epson America, Inc. MX-80, FX-80, MX-100 and FX-100 printers.

The software is priced at \$695, according to the vendor. An interface to the Magicenter network, which will enable users to communicate charts via modem, will be available shortly, a vendor spokesman said.

Tool ports Apple programs

Abaton Technology Corp. of Santa Monica, Calif., has introduced a hardware and software product said to translate programs written for the Apple Computer, Inc. Apple II line into software that will run on the Apple Macintosh.

The \$1,995 Abaton Transform software will be sold only to programmers, who reportedly will be able to use the product to port programs in between 15 minutes and six hours.

The product consists of a sealed add-on card for the Apple II and software on both 5¼-in. and 3½-in. diskettes for the Apple II and the Macintosh respectively. To port an application to the Macintosh from

the Apple II, a cable from the add-on card is connected to the Macintosh, and the software is run on both.

A 512K-byte Macintosh is required for porting. Most resulting applications will run on the 128K-byte version of the Macintosh, Abaton said.

The porting is done at the object-code level. Once ported, the application cannot be copy protected.

To transfer an Apple II application without use of the Abaton Transform could take up to eight man-months and cost \$20,000 or more, Abaton said. Further enhancements to the product, to permit programmers to add enhancements to the application they are porting, will come in several months, the company said.

Microsoft offers document design tools for Macintosh

Microsoft Corp., based in Bellevue, Wash., has introduced document design software, called *Typographer*, and announced an upgrade of its *Macenhancer* product, both for use on the Apple Computer, Inc. Macintosh.

The *Typographer* permits users to produce documents of any length, limited only by disk space. The software also permits free-form placement of text and graphics and the use of indented, staggered or overlapping regions of type.

Typographer users reportedly can preview each page or page spread on the screen, with accurate scaling. Instead of using word wrap, the soft-

ware maintains a true line count and adjusts word spacing across the entire line. The software's hyphenation meets accepted composition standards, Microsoft said.

Typographer is said to contain several editing functions, including global search and replace, block move and insert and delete. It also can read files directly from such Macintosh programs as *Microsoft Word*, and *Apple's Macwrite* and *Macpaint*. Users can paste text and graphics from *Microsoft Excel*, *Microsoft Chart* and *Microsoft File*, among other programs, the vendor said.

Version 2 of the *Macenhancer* soft-

ware reportedly supports additional printers, such as the Hewlett-Packard Co. *Laserjet*, and offers a scaling function that can set graphics and text output to the correct size for use on various printers.

The scaling function supports the *Apple Imagewriter*, *Epson America, Inc. FX-80*, *FX-100*, *LQ-1500* and *MS-100*, among others.

Macenhancer, which supports multiple peripherals on the Macintosh, reportedly already includes

three additional IBM-compatible ports, one parallel and two serial.

Typographer runs on both the 512K-byte Macintosh and the 128K-byte version of the machine and is priced at \$195. It will be available in October.

Macenhancer works with either the 512K-byte Macintosh or the 128K-byte version of the machine. It costs \$249. Current users may receive Version 2 of the *Macenhancer* software at no charge.

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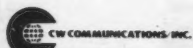
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MICROCOMPUTERS

Lotus Concerto bows

Offers Basic programming

Lotus Development Corp. of Cambridge, Mass., has introduced Concerto, software for the IBM Personal Computer that reportedly permits developers to program in Basic language as they design add-ins for Lotus' Symphony.

Symphony add-ins, programs that can be attached to Symphony to operate as part of the larger product, could previously be developed only in assembly language, Lotus said. The add-ins can be used to enhance one of Symphony's five functions or to provide a link to other software programs or computers.

The \$99 Concerto, devel-

oped by Leblond Software, Inc. of Indianapolis, reportedly includes several ready-to-run applications for use with Symphony, including one called goal seeking. Goal seeking permits a spreadsheet to be solved in reverse, allowing a user to work from a target profit back to the sales required to reach that target, for example. Also included are Basic routines to permit linear regression analysis and to covert Micropro International Corp.'s Wordstar files into a Symphony format.

Using the product's configuration program, users can adjust the amount of Concerto that resides in the Personal Computer's memory.

Both Lotus and Leblond will market Concerto.

Maintenance management tool out

Rantac of Bellevue, Wash., has introduced its Benchmate software for automated maintenance management at factories, hospitals, universities and other facilities.

Benchmate, for the IBM Personal Computer, reportedly can handle work orders, preventive maintenance, equipment data and history, job scheduling and a spare parts inventory.

Its scheduling module permits managers to send workers to jobs where they are needed

and to create "what-if" scenarios.

Its reporting capabilities are said to include work and cost histories, jobs scheduled, projected preventive maintenance, past due preventive maintenance, completed jobs and other functions. The package is intended for use in maintenance shops with up to 75 workers.

It costs \$5,000, which reportedly includes 16 hours of on-site instruction and one year of support.

TI offers Personal Consultant version

Texas Instruments, Inc., based in Dallas, has announced a second-generation version of its Personal Consultant knowledge system development software said to offer extended knowledge representation features, in-

creased rule capacity and an enhanced user interface.

Personal Computer Plus, which runs on both TI and IBM personal computers with 512K bytes of internal memory, is priced at \$2,950 and will be available in the fourth quarter.

The package enhances the Personal Consultant product by incorporating extended knowledge representation capabilities such as frames, procedural functions, access methods and meta rules, TI said.

Additionally, a Lisp compiler speeds operation and allows the package to handle more information, the vendor said. Personal Consultant Plus can develop and deliver applications of up to 2,000 knowledge base elements.

During creation of knowledge systems, an interactive dialog reportedly prompts the developer only for essential information, with many default values selected by the system. The rule specification language has been expanded to provide direct access to more system features, and a full-screen editor handles modifications to any information field, according to the vendor.

The user interface also has been upgraded, with pop-up windows showing menu items and Help information.

TI also dropped the price of the original Personal Consultant to \$950 from \$3,000. The \$950 cost can be applied toward the purchase of Personal Consultant Plus if the user decides to upgrade.

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MICROCOMPUTERS

IBM micro gets net tool

Management program allows users to switch

Computer Associates International, Inc.'s Micro Products Division of San Jose, Calif., has released a network management software program for IBM Personal Computers running Novell, Inc. Netware or 3Com Corp. EtherSeries software.

Easyplus Network Manager reportedly supports up to 10 windows, each simultaneously running a network user's application. The windows allow users to switch between programs, transfer data, size and position the windows and send text to a

file, screen or printer.

The product is said to provide full local-area network support for the vendor's Plus series of accounting, word processing and other programs.

For data security, Easyplus Network Manager uses local-area network semaphores for record and file lockout, preventing users from writing to the same file at the same time.

The system requires a network server with a minimum of 512K bytes of memory, a hard disk drive and remote user stations with a minimum of 256K bytes of memory.

Easyplus Network Manager is priced at \$395 for a four-unit version and \$595 for an eight-unit configuration.

Connector lets IBM AT run Lotus 1-2-3 under Xenix

Uniform Software Systems, Inc. of Santa Monica, Calif., has announced a version of its The Connector software that reportedly permits Lotus Development Corp.'s 1-2-3 software to run on the IBM Personal Computer AT under Microsoft Corp.'s Xenix.

The Connector for Xenix and Lotus' 1-2-3 reportedly allows 1-2-3 to run in the protected virtual address mode of the Personal Computer AT under Xenix, offering the spreadsheet access to more than 890K bytes of memory. Under Xenix, the Lotus product can run in the foreground while other programs run in the

background simultaneously.

When running under The Connector, 1-2-3 operates as it would when running under IBM's PC-DOS operating system, Uniform said. Since 1-2-3 requires use of the Personal Computer AT's console, only one user can run 1-2-3 at a time.

The Connector for Xenix and Lotus 1-2-3 is priced at \$149 and is available immediately. It is one of a series of The Connector products from Uniform, others of which include The Connector for Venturcom, Inc.'s Venix and The Connector for IBM's PC/IX.

SOFTWARE

■ Hewlett-Packard Co. has introduced Executive Card Manager (ECM) software for its Touchscreen personal computers.

The ECM integrates a data base and telephone number filer in a system reportedly able to file the equivalent of four type-written pages of information on any record. Up to 64,000 records can be stored, HP said.

Also announced were ECM: Templates, which are said to provide ECM users with form and report layouts that can be customized.

ECM will permit the transfer of information between ECM and other applications such as Ashton-Tate's Dbase II and Dbase III, Lotus Development Corp.'s 1-2-3 and HP's HP Access, the latter for communication with HP 3000 systems, according to the vendor.

ECM requires 256K bytes of memory and costs \$295. ECM: Templates is \$125.

HP, 300 Hanover St., Palo Alto, Calif. 94304.

■ United Software Industries, Inc. has announced word processing software for the IBM Personal Computer, Personal Computer XT and PCjr.

Einstein Writer reportedly includes automatic formatting, single-keystroke commands for the Personal Computer's 10 function keys, a split-screen mode and a 65,000-word spelling checker. Single-keystroke functions include move, copy, delete, find, replace, save, print, repeat and restore.

Other features include on-line Help screens, a 64-char. additional comment line to add detail to saved files and 125-char. text lines.

The software requires a minimum of 128K bytes of memory and one or more single- or double-sided disk drives as well as IBM's PC-DOS 1.1, 2 or 2.1.

Einstein Writer costs \$169.95, the vendor said.

United Software Industries, Suite 300, 1880 Century Park E., Los Angeles, Calif. 90067.

■ Softcorp has announced software that reportedly allows enhanced sideways printing of Ascii text files from the IBM Personal Computer.

Continued on page 66

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#USERS

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MICROCOMPUTERS

Continued from page 64

Sidestep reportedly allows users to select from 18 combinations of font sizes and print qualities for sideways printing applications.

Users can rotate an entire document 90 degrees.

The product can be used for printing files from spreadsheet programs such as Lotus Development Corp.'s 1-2-3 and from project management programs such as Softcorp's Advanced Project 6.

The software is said to be compatible with most dot-addressable dot matrix printers, such as the IBM Graphics Printer and Color Printer and the Epson America, Inc. MX, FX and JX series printers. It requires PC-DOS 2 or later.

Sidestep costs \$60.

Softcorp, 2340 State Road, Clearwater, Fla. 33575.

■ Goldata Computer Services, Inc. has announced a local-area network version of its Goldatabase data base management software for the IBM Personal Computer.

Goldatabase Version 6 reportedly includes compatibility with 24 different local-area networks, including the IBM Personal Computer Network and offerings from 3Com Corp. and Corvus Systems, Inc. Features include record and file locking for multiple users, user-defined menus and computerized input screens.

Goldatabase Version 6 is priced at \$595 for the single user, with the local-area network version price dependent on the number of concurrent users. A typical four-user local-area network license costs \$1,487.50. The upgrade cost from Version 5 of the Goldatabase is \$50.

Goldata Computer Services, 2

Bryn Mawr Ave., Bryn Mawr, Pa. 19010.

■ Datamate Co. has announced software that reportedly allows users of the IBM Personal Computer and Personal Computer AT and the Hewlett-Packard Co. 150 personal computer to create typesetting formats on the HP LaserJet printer.

Jetset II is said to consist of two utilities, one menu-based and one text-based, that allow formatting changes without the use of escape codes. Other features include text justification, centering and flush-right printing.

The menu-based utility reportedly supports all HP font cartridges and converts the user's choice of typeface, lines per inch and margins into escape codes, which are sent directly

to the printer.

Jetset II is \$99.

Datamate, Suite 128, 4135 S. 100th East Ave., Tulsa, Okla. 74146.

■ Radian Corp. has announced enhancement of its Rulemaster expert systems development software to include a new user interface. The interface reportedly simplifies the development and maintenance of expert systems.

Rulemaster, available in versions for several personal computers and minicomputers under Unix, reportedly will ship in the fourth quarter. Its new interface is said to offer screen and menu handling features, an editor for structuring applications and an editor for generating files of examples in order to create rules.

A unit license for Rulemaster is priced at \$15,000 for the IBM Personal Computer AT running Microsoft Corp. Xenix, the AT&T Unix PC 7300 or the Tektronix, Inc. 4404.

A version of the software, priced at \$25,000, is available for Unix-based minis.

Radian, P.O. Box 9948, 8501 Mo-Pac Blvd., Austin, Texas 78766.

■ Hypergraphics Corp. has announced four software programs in its On-Line Encyclopedia (OLE) series of instruction packages for the IBM Personal Computer, Personal Computer XT and AT.

The programs, titled Data Communications, AT&T Unix, Computer Literacy I and Computer Literacy II, reportedly reside in memory alongside IBM's PC-DOS, Basic and most applications software programs. Each OLE is organized alphabetically and by subject, allowing access and exit with a single keystroke.

The vendor also announced the OLE Tool Kit, applications generator software that allows users to create and maintain up to 80 of their own encyclopedias. The software includes an authoring graphics system, computer objects library, tutorial, encyclopedia manager and utilities to convert an encyclopedia and to create an index.

The Data Communications and Unix courses cost \$69.95. Computer Literacy I and II are priced at \$39.95. The OLE Tool Kit carries a one-time licensing fee of \$5,000, including support and a one-day user seminar.

Hypergraphics, P.O. Box 50779, Denton, Texas 76206.

From page 59

Micro users groups provide forum

ate all the help their followers can provide, but the willingness to volunteer is diminished when someone else is in charge.

Because of this, the group might want to structure itself as a self-help organization that needs everyone's participation.

As for orientation, the users groups should be oriented toward newcomers, who provide new ideas, questions and a source of volunteers. Without new volunteers universal burnout comes quickly.

Lastly, the group should be sensitive to the attention span of its members. Groups should not be bored with hours of printer talk; formal presentations should be kept to 15 or 20 minutes.

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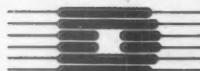
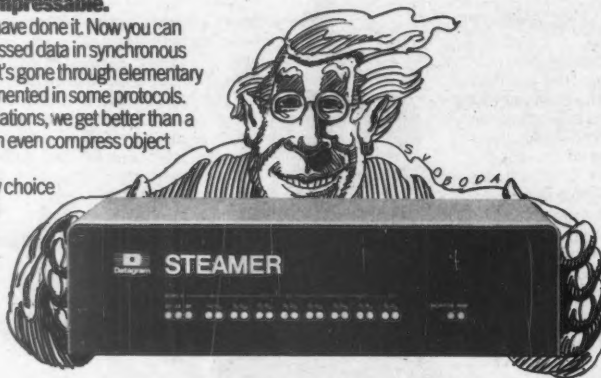
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COMMUNICATIONS

Devices reconfigure T1 channels

By John Dix

Use of a new type of switching device for high-speed digital communications facilities will enable telephone companies to offer enhanced services and may also benefit companies that operate large private networks.

Generically referred to as digital cross-connect systems, the devices are used to reconfigure channels within T1 digital communications links. T1 facilities operate at 1.54M bit/sec. and are typically segmented by time division into 24 individual channels, each of which operate at 64K bit/sec.

Traditionally, if channels within a T1 link had to be routed to different locations, the digital signal had to be broken down into 24 individual analog signals, put through a type of patch panel and then taken back up to a digital signal, according to Ralph Ganss, product support manager

with Microtel Ltd., a system manufacturer in Atlanta. This requires the multiplexing devices, called channel banks, to be configured back-to-back.

Digital cross connects facilitate that operation and do away with the need for one channel bank. They support multiple inbound and outbound T1 links, enabling any 64K bit/sec. channel within an incoming T1 to be routed to any outgoing T1 link.

Although digital cross-connect technology is not new, it is only now becoming cost effective, according to Ian Sugarbroad, general manager of digital network cross connects at Northern Telecom, Inc. The cost reduction is attracting the attention of telephone companies and some companies with large private networks.

Telephone companies, hoping to capitalize on the explosion of interest in T1 facilities since AT&T's divestiture, are looking to digital cross connects as a means to pro-

vide new services. One such service, according to John Mahala, department chief of transmission product management with AT&T Network Systems in Burlington, Mass., is customer-controlled virtual private networking.

Digital cross connects will help "blur the distinction between private lines and message services," Mahala said. Customers will be able to rearrange the destination of circuits within a T1 trunk in a matter of minutes on a periodic or scheduled basis, he said.

Such capabilities would enable T1 service customers to configure the link for "voice message traffic during the day and at the end of the day have it automatically reconfigure itself to dump a lot of data to another facility," Mahala said.

Although telephone companies represent the largest market for digital cross

Continued on page 72

■ MCI Communications has reduced the rates for its Terrestrial Digital Service and Digital Data Service/68

■ Atlantic Research has added an IBM Systems Network Architecture protocol trace feature to its Comstate II protocol analyzer/68

■ Datastream Communications announced a protocol converter and a network management system designed to work with IBM 3705 or 3725 communications processors/68

IBM to offer matrix switch

IBM, in Rye Brook, N.Y., has announced the availability of a matrix switch that industry sources say is being provided to the mainframe maker by Bytex Corp. of Southboro, Mass., the leader in the matrix switch industry.

The IBM 3728 Communications Control Matrix Switch, like Bytex's Autoswitch product family, is intended to sit between modems and communications processors, or between modems and outgoing telephone lines. The switches enable any incoming port to be routed to any outbound port.

Matrix switches are most typically used in front of communications processors to provide sparring for networks that require high availability. In the advent of a processor failure, the switch can redirect all incoming lines to a backup system.

The IBM switch, like Bytex's Autoswitch 240, is available as a stand-alone or as a base unit that supports up to 15 exten-

Continued on page 72

NCR upgrades cut upkeep fees

NCR Comten, Inc. of St. Paul, Minn., has announced system upgrades for two communications processors that result in reduced maintenance fees. The company also announced a new lease-to-purchase conversion option that enables customers to purchase currently leased systems at substantial savings.

Users who own Comten 3650 Model X4 or 3690 Model X5 communications processors can upgrade their machines to 3650 Model X9 and 3690 Model X8 processors, respectively. The enhanced packaging and design of the new models results in a reduction of monthly maintenance charges by 34% to 44%, the company reported.

Comten customers currently leasing these processors must purchase the products before they can upgrade to the new models and reduce their maintenance fees.

To encourage that migration, Comten's lease-to-purchase conversion option allows users to apply more of the fees

Continued on page 72

Comsat adds satellite unit

Communications Satellite Corp., more commonly known as Comsat Corp., recently announced it will market a 56K bit/sec. data communications terminal and satellite dish at a \$12,000 average price per unit.

Comsat, in Washington, D.C., said the unit will be initially available in the fourth quarter of 1985 and announced that it has signed a contract with Halliburton Co. of Dallas, to supply 120 dishes and a central switching control hub. The Halliburton contract is worth in excess of \$1.5 million, according to Comsat Technology Products President A. William Perigard, and will also include the satellite facilities of American Satellite Corp. of Rockville, Md.

Perigard said the satellite dishes, either 1.2 or 1.8 meters in diameter, are capable of handling voice and videoconferencing communications. He said the voice quality will not be the equivalent of standard terrestrial lines. "Our data terminal repre-

Continued on page 68

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Oracle announces portable version of IBM SQL/DS and DB2

Any application written for IBM's SQL/DS or DB2 relational database management systems will now run without modification on DEC, DG, AT&T, HP and several other manufacturers' minis, and a wide range of micros, including the IBM PC/XT and PC/AT.

Oracle Corporation introduced the first relational DBMS in 1979. Today ORACLE is the only relational database management system that is completely compatible with IBM's SQL/DS and DB2. Programs written for SQL/DS or DB2 will run unmodified on ORACLE.

Originally designed for IBM mainframes and DEC superminis, ORACLE is now available on a wide range of machines, from mainframes to PCs. And ORACLE includes an integrated set of 4th generation software tools not available with either SQL/DS or DB2.

■ **Why not Cullinet, ADR or Focus?** There is a clearly defined standard for relational database systems. It's called SQL, and it's from IBM. Both ANSI and the US Government are in the process of adopting SQL as the standard database language. The Cullinet, ADR and FOCUS software packages each implement their own unique database language - each one painting the user into

its own corner. Since its inception, Oracle Corporation has provided total IBM SQL compatibility.

Few shops nowadays run only IBM mainframes. Why, then, even consider a database solution that runs *only* on IBM mainframes? Applications written with ORACLE run identically on mainframes, minis, and PCs. Because all versions of ORACLE are identical.

FOCUS, Cullinet and ADR offer either a limited subset, a completely different product or nothing at all (respectively) for the PC. And none have minicomputer products.

■ **Why not just go with DB2 or SQL/DS?** A relational DBMS simplifies but does not by itself eliminate application programming. Additional tools are necessary if users are to create and maintain their own applications.

DB2 and SQL/DS are relational systems, period. ORACLE is a relational DBMS plus integrated 4th generation software tools for application generation, report writing, color graphics and network communications.

Furthermore, SQL/DS and DB2 run only on IBM mainframes (and are somewhat unlikely ever to run on another vendor's system). ORACLE runs on more IBM hardware

and operating systems than do IBM's relational products.

■ **What about Goldengate, dBase III, Symphony or Framework?** PCs need more than PC software if they are to be usefully integrated with corporate data processing. Incompatibility with SQL, while serious, is not the only major problem with these micro packages. None provides an acceptable level of data security, integrity or recovery facilities. And their PC-to-mainframe links are functionally primitive and difficult to use.

To effectively link computers, all machines in the network should run the same software. Only ORACLE provides standard software on mainframes, minis and micros. Data and programs can then be shared among users of different machines, distributing the workload.

ORACLE is currently installed on over 1000 mainframe and supermini systems around the world, as well as on thousands of PCs. Oracle's customers include 8 out of the 10 largest U.S. corporations, as well as major foreign companies and government agencies.

For further information, contact Oracle Corp., Dept. C2, 2710 Sand Hill Rd., Menlo Park, CA 94025, or call 415/854-7350.

COMMUNICATIONS

Converter, net system work with IBM 3705, 3725 devices

Datastream Communications, Inc. of Santa Clara, Calif., has announced a protocol converter and a network management system designed to work with IBM 3705 or 3725 communications processors.

The 8010 protocol converter supports eight to 32 asynchronous ports at speeds up to 19.2K bit/sec. Devices can emulate 3278 terminals and 3287 printers.

The device also has two synchronous ports that support speeds up to 19.2K bit/sec. for IBM's Synchronous Data Link Control protocol or 9.6K bit/sec. for IBM's Binary Synchronous

Communications protocol.

The 8030 network management system supplies the same protocol capabilities as the 8010. In addition, it records network activity at physical and logical levels for attached devices. The network management system monitors up to 32 asynchronous ports and includes a 10M-byte hard disk drive for statistical storage.

The network management system records user identifications, logical unit or device addresses, and port and synchronous line activity.

The 8010 costs \$9,900, and the 8030 sells for \$14,900.

MCI lowers service rates

Digital transmission costs cut 2%, 15%

MCI Communications Corp., headquartered in Washington, D.C., has cut the rates for its Terrestrial Digital Service and Digital Data Service.

Terrestrial Digital Service, a dedicated digital T1 service that operates at 1.54M bit/sec., will decrease in price by an average of 2%. A New York-to-Washington, D.C., route, for example, would have previously cost \$4,100 to install and \$8,856 per month. With the new rates, installation is set at \$2,286, and the monthly rate is \$8,807. The service is available in 60 cities.

able in 60 cities.

MCI's Digital Data Service is a digital, full-duplex, synchronous service that supports transmission speeds of 2,400, 4,800, 9.6K and 56K bit/sec. The service's monthly rates will fall by approximately 15%. The installation cost of a New York-to-Washington, D.C., line will rise from \$650 to \$1,300, and the monthly service charge will drop from \$1,772 to \$1,474.

Firm adds IBM SNA protocol trace feature

Atlantic Research Corp. of Alexandria, Va., has added an IBM Systems Network Architecture (SNA) protocol trace feature to its Comstate II Protocol Analyzer.

The feature decodes SNA protocol for an operator who enters information using menu-driven commands, the vendor said.

The tracer reportedly decodes all frame identifier types and displays frame, transmission, request and response headers.

Bind commands are expanded and sense information is displayed whenever a sense data indicator is set, the vendor said.

A user can select whatever data he wants to display, for example, frame address, origination address field, destination address field, sense data indicator bit, response-type indicator bit and exception response indicator bit.

The option costs \$800, according to the vendor.

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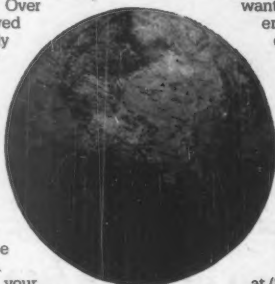
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From page 67

Comsat adds satellite unit

sents an application that stresses four areas: interactive data, electronic mail, high-speed facsimile transmission and thin-route voice."

According to Perigard, the product is the first to be able to make necessary high-speed satellite protocol conversion in an IBM environment, providing an interface to systems incorporating IBM's Systems Network Architecture/Synchronous Data Link Control.

He said the principal sources of competition for the interactive data communications satellite dish will be Equatorial Communications Co. of Mountain View, Calif., and M/A-Com Linkabit, Inc. of San Diego.

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If there's noise or interference on the line that does require Fastlink to transmit your data at a slower rate, the adjustment is made automatically.

Of course, other modems adjust their speed, too. But they typically have to cut their speeds in half, from 9600 bps, for example, to 4800. In fact, under some conditions, other modems will actually disconnect in mid-transmission.

Fastlink, on the other hand, adjusts its speed a few bps at a time, so you can still maintain maximum speed at all times during transmission.

What it comes down to is this. With IRMA's Fastlink, you can now count on getting the data you need fast, getting it economically, and, most important of all, getting it right. And you can get all this from Fastlink without having to pay for expensive, conditioned, dedicated lines.

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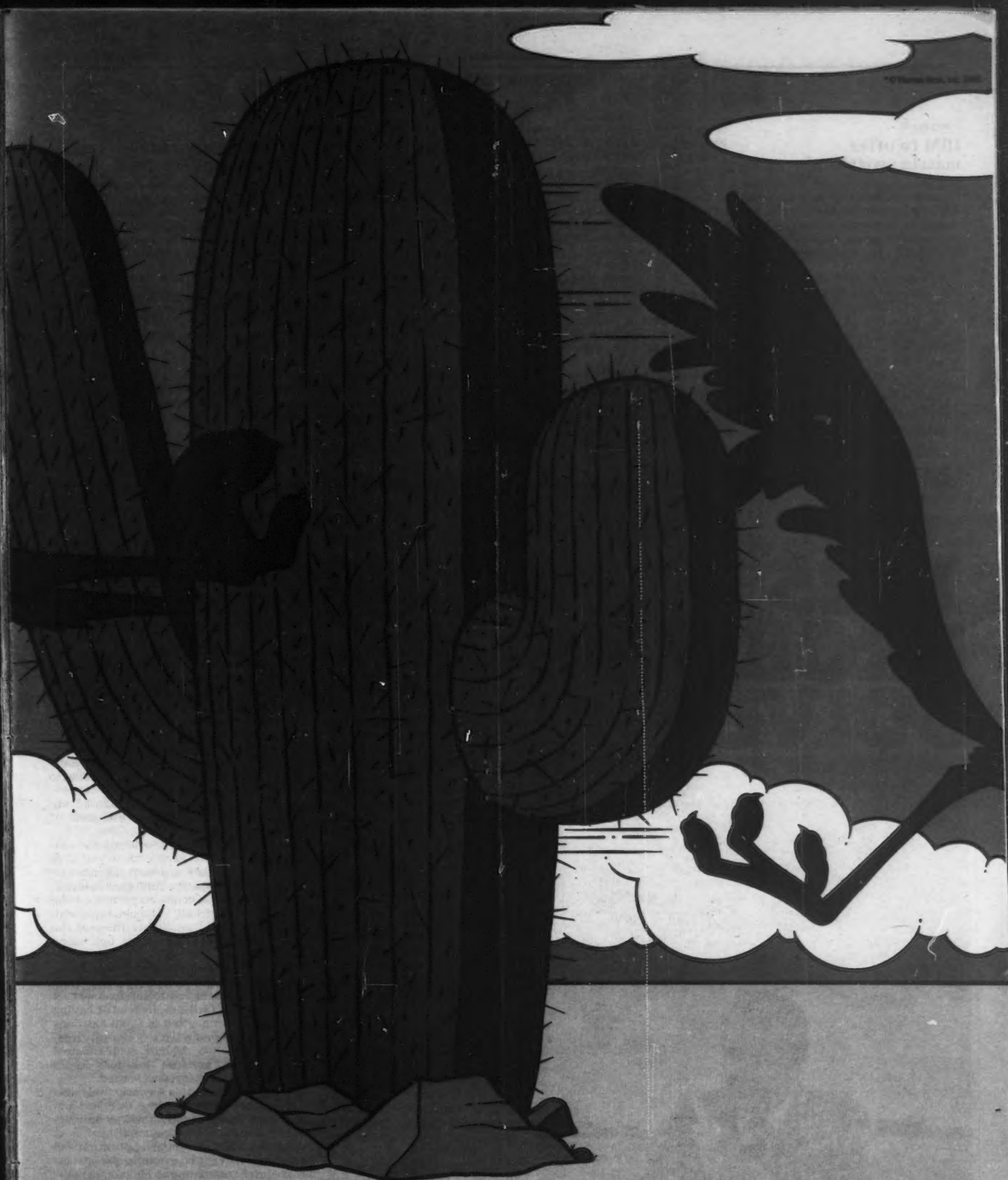
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SPEED ISN'T ALSO HAS



**ENOUGH. A MODEM
TO BE ACCURATE.**

COMMUNICATIONS

From page 67

IBM to offer matrix switch

sion units. A single switch frame has 15 card slots that can be configured with a variety of interface types, according to the vendor. Interfaces that support high speeds reduce the overall number of ports available on a given switch.

A single-unit IBM system supports 240 four-wire analog ports, or 120 CCITT V.24/RS-232C ports at speeds up to 19.2K bit/sec., or 60 CCITT V.35 interfaces at speeds up to 76.8K bit/sec. or a combination of the above.

Multiple unit systems can support 3,840 four-wire analog ports, 1,920 CCITT V.24/RS-232C ports or 960 CCITT V.35 interfaces.

A switch node can consist of one

or more units — up to 16 — and be networked with up to 61 3278 Communications Control Matrix Switch systems, IBM reported.

Each 3278 must have at least one control terminal. That terminal can be a switch control console consisting of an IBM 3161 Ascii Display Station or equivalent and an IBM 4201 Printer with an Asynchronous Serial Interface Module; or a support processor, a dedicated IBM Personal Computer XT running the 3278 Support Processor licensed program. The XT must have at least a 10M-byte hard disk, a 320K-byte diskette and 640K bytes of random-access memory.

The 3278 Support Processor Licensed Program, which does not require DOS or any other operating system, can control all local and remote 3278s in a networked configuration.

The support processor provides a storage logging facility to trace network events, an editing function for creation of command lists, automatic execution of command lists, a security subsystem and an on-line Help facility.

The 3278 Control Mode provides control over the matrix switch, including switch initialization, line configurations and alarming for controller ports or groups of ports, according to the vendor.

Available beginning in December, the 3278 costs \$15,800 and carries a \$81.50 minimum monthly maintenance charge.

Interface cards that support a varying number of ports range in price from roughly \$1,200 to \$2,600. The 3278 Support Processor Licensed Program has a one-time charge of \$12,000.

From page 67

NCR upgrades cut upkeep fees

paid during the lease toward the purchase price of the system.

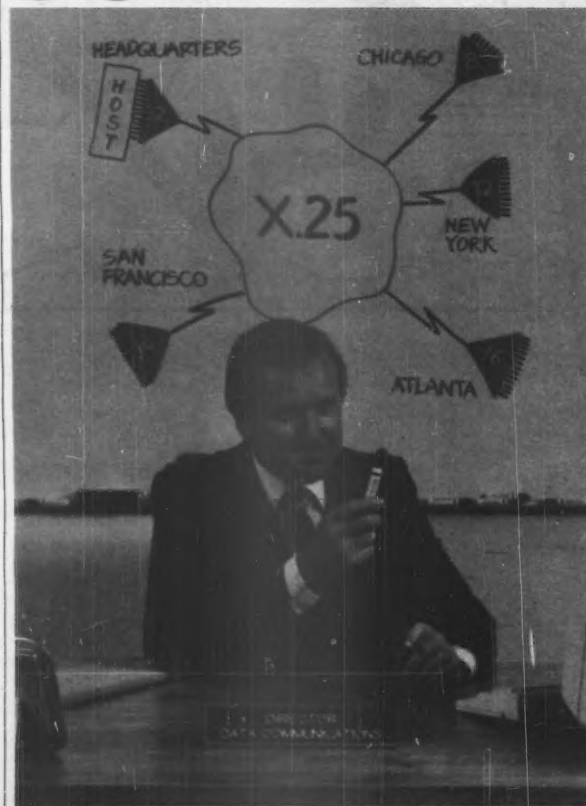
Under the new option, the accrual rate and the maximum limit at which lease fees can be applied toward purchase of the systems have been increased.

The combined effect of the lease-to-purchase option and the system upgrade enables users to purchase and upgrade their X4 and X5 models at reduced rates, the vendor reported.

Users with X4 or X5 machines under two-year leases can purchase and upgrade them to the X9 or X8 model for roughly 90% of the purchase price of the those models, according to Comten.

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From page 67

Devices reconfigure T1 channels

connects, manufacturers of the devices said they have had inquiries from many other large users. The systems, however, are expensive — roughly \$1,200 to \$1,500 per T1 port, according to Sugarbroad at Northern Telecom — and typically have a minimum of 16 or 32 ports. Northern Telecom's DNX-100, for example, has a minimum of 31 T1 ports and a maximum of 248. AT&T's digital access cross-connect system ranges in port size from 32 to 128 T1 ports.

AT&T's Mahala said there is a trend under way to downsize digital cross connects. But even today the systems will appeal to companies with at least "a dozen T1s going through their network," according to Microtel's Ganss.

Private industry can take advantage of the systems in a number of ways.

"If you had a few locations feeding a hub point from which you were going to route to a long-distance carrier, the capacity from each subtending location could be packed on the [T1] at the hub," Mahala explained. "You would get higher fill over the long-distance net," thus optimizing that link.

Another application would be to use a digital cross connect in a campus environment to interconnect all company facilities. Instead of having point A connected to B, all locations could be connected to a central cross-connect hub, Mahala said. Channel capacity between locations could thus be rearranged as needed.

The hub in this scenario could also act as the point of interface for long-haul carriers, providing the optimizing consolidation capabilities.

A third potential application for digital cross connects in private industry, according to Mahala, is in disaster recovery. Companies can use a switching system to act as a bridge between a primary data base facility and a recovery site. In the event of a catastrophe, the cross connect, housed at the recovery site, could redirect user traffic to standby equipment.

Although telephone companies have the capacity to use the digital cross connects that are currently available — from which users will benefit — the technology will probably find a niche in private industry as vendors scale down their products.

SYSTEMS & PERIPHERALS



HARD TALK
James Connolly
CW Senior Editor

Please enter your cobfiuk

Monday mornings can be tough enough, particularly when they involve returning from summer weekends to face a string of project deadlines. So a person doesn't need a computer to kick off the week by calling him "Scumbag," or to start the next week with the salutation "Fatarse."

But that is what a Digital Equipment Corp. Microvax I did to Mark Welsh recently, finally hitting him with "Forize" on the third Monday morning. "My spectacles were steamed up worse than when I unload a just-finished dishwasher," recalled Welsh, a senior systems software engineer for Ex-Cell-O Manufacturing Systems Co. in Rockford, Ill.

The mysterious slurs that Welsh endured were a few of the bizarre passwords generated by an apparently creative Microvax that he shares with five other users in a networked environment. Many of the other passwords weren't insulting; they weren't even pronounceable or memorable, Welsh said.

Welsh laid the blame on an engineer or someone else involved in developing DEC's VMS 4.1 operating system.

"It's not impossible that it could have happened, but it is so highly improbable as to make you wonder," DEC spokesman Steven Kallis countered, suggesting that Welsh may have been the victim of a co-worker's practical joke.

Whoever was to blame, the result was that the Microvax spewed out strange passwords through an optional VMS feature that periodically generates new pass-

Continued on page 80

'Erased' tapes present potential security threat

By Donna Raimondi

If you sell or throw away your used, erased magnetic tapes, you may be tossing your corporate information up for grabs.

All the warnings that manufacturers package with magnetic media — about not spilling coffee on the tape, not exposing it to airport X-rays and metal detectors — may lead operations people to believe the media is delicate and easily erased. It is not.

Although little evidence exists that corporate spies have lifted data from degaussed magnetic tapes (reels placed in an intense magnetic field in order to erase them), a recent paper raises questions about what to do with old magnetic tapes that might still contain valuable information.

With all these rumors of instability floating around, it is hard for people to realize just how stable and long lasting that magnetically recorded information really is, according to physicist William Manly in his paper, "Data Security and Used Magnetic Storage Media," written in July 1985.

"If you value your information, don't sell your used magnetic tapes or disks; give them away, or throw them in the trash," Manly warned.

Manly is an independent consultant with HMI Consulting in Arlington, Texas. He is not in the tape erasing business but wrote his report for two clients who were worried about the proper disposal of sensitive information.

When a file is deleted from tape, the

Continued on page 78

■ Memorex targeted better access time and data availability in announcing a dual path feature for its 3690-2 disk subsystem/74

■ Distributed Logic released a disk drive interface for DEC small systems/74

■ Spur Products announced an adapter to let Prime Computer minicomputers drive IBM printers/80

INSIDE

Data Storage/74

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Graphics

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Sun unwraps workstations

Emphasizing that it is maintaining its open systems architecture, Sun Microsystems, Inc. of Mountain View, Calif., has introduced a family of workstations, programming environments, file servers and a floating-point accelerator.

In an announcement last week, Sun said the three Sun-3 workstations and other products are, like the earlier Sun-2 product line, based on industry-standard software and hardware components designed for full integration and future upgrades. The company said that those standards include Ethernet for local-area networking and Sun's version of the AT&T Unix and that software that runs on Sun-2 workstations is compatible with Sun-3 products.

The workstations and two file servers are based on Motorola, Inc. 68020 16.67-

MHz microprocessors with a 12.5-MHz Motorola 68881 floating-point coprocessor and a full 32-bit VM-based architecture.

Sun claimed that the Sun-3 products provide twice the speed of a Digital Equipment Corp. VAX-11/780 in desktop systems for technical professionals.

The products are targeted at applications that demand high-performance graphics such as computer-aided design in the electronics and mechanical engineering fields and in architectural uses such as facility planning and landscaping.

The workstations include the Sun-3/160C color workstation, featuring eight color planes and the ability to display 256 colors simultaneously; the Sun-3/

Continued on page 74

Design, numerical control tools bow

Series of Prime systems target entry-level, mid-range market

A series of computer-aided design and computer-aided numerical control programming packages have been introduced by Prime Computer, Inc. of Natick, Mass., to the entry-level computer-aided design and manufacturing systems markets.

The products are configured to provide new CAD and numerical control programming users with entry-level and mid-range systems that can be expanded to grow with programming needs, according to a Prime spokesman.

The CAD Starter Packages are single-user, two-dimensional systems based on the Prime 2250 minicomputer with controller. They are available with Prime's Medusa design drafting software and are offered in 50Hz or 60Hz configurations, depending on local power requirements. They include Prime's PW153 CAD terminal and the Prime PT200 graphics terminal. They are available in three configurations, priced from \$35,000 to \$55,000.

The Expanded CAD Packages are two-seat configurations based on the Prime 2550 minicomputer

with controller and software, including Medusa, Prime's information data management/application development, supersyntax and variational geometry. Also available in 50Hz or 60Hz configurations and with the PW153 CAD terminal and PT200 graphics terminal, they are priced from \$95,000 to \$135,000.

The Entry-Level Computer-Aided NC Programming Packages are single-seat, stand-alone numerical control tape preparation systems based on the 2250 minicomputer. They include controllers and Cadcentre, Ltd.'s GNC 2½-axis programming software. They cost from \$45,000 to \$55,000, according to Prime.

The Expanded Computer-Aided NC Programming Packages also are based on the 2250 minicomputer with GNC programming software, a tape generator postprocessor program and the information data management/application development software.

They are available with the Prime PT200 graphics terminal and the Prime PGT4109 CAD terminal. There are three configurations, priced from \$80,000 to \$90,000.

According to Prime, all of the systems include the required cables and can be configured according to U.S. and international requirements.

Parallel processing mini introduced

A start-up company has added its first product to the growing number of parallel processing minicomputers. International Parallel Machines, Inc., of New Bedford, Mass., has unwrapped its IP-1 that runs under the company's Runix operating system.

International Parallel was started five years ago with \$2 million worth of seed money from relatives and friends, according to Robin Chang, president and treasurer. No institutional investors are involved in the project, he added. The IP-1 is the company's first product.

The company uses local memory and multiaccess memory modules that are said to act like multipoint memories to allow simultaneous access by different processors. An intelligent disk interface is said to allow data transfers while the processor runs at full speed.

A basic configuration for the turnkey system includes nine processors with interconnection switches, 10M bytes of main memory, 150M bytes of on-line disk storage, more than 50 I/O ports, a terminal and the Runix operating system. The basic system costs \$49,950.

SYSTEMS & PERIPHERALS

DATA STORAGE

■ **Distributed Logic Corp.** has released an enhanced small disk interface controller that is said to allow the attachment of one or two Winchester disk drives to Digital Equipment Corp.'s Microvax, Micro/PDP-11 and LSI-11 computer systems.

The DQ656 controller's universal formatting system is said to allow systems integrators to mix drives with different performance characteristics without having to specifically configure the controller board. The controller plugs into any standard DEC Q-bus quad slot. It is compatible with 5¼-in. Winchester disks drives made by Control Data Corp., Maxtor Corp., Micropolis Corp., Siemens AG, Hitachi America, Ltd. and Fujitsu America, Inc.

The DQ656 costs \$1,115. *Distributed Logic, P.O. Box 6270, 1555 S. Sinclair St., Anaheim, Calif. 92806.*

■ **Memorex Corp.** has announced a dual-path feature for its existing 3690-2 disk storage subsystem that is attachable to a Memorex 3888 or IBM 3880 storage control unit.

The feature, a 3699-2 alternate string controller, is said to improve data storage access time and increase data availability by doubling the number of access paths available to each disk drive in a 3690-2 string. It permits read/write operations to take place on two different drives within the string at the same time.

A minimum dual-path 3690-2 subsystem consists of a 3693-2 primary string controller and a 3699-2. Each

unit provides 729.8M bytes of storage capacity. The system costs \$35,480 for the 3693-2 primary string controller, \$26,600 for each 3690-2 disk drive and \$38,990 for the 3699-2 alternate string controller with the dual-path feature.

Memorex, San Tomas at Central Expressway, Santa Clara, Calif. 95052.

TERMINALS

■ **MSI Data Corp.** has announced its PDT III portable data terminal.

The PDT III comes with a memory size of either 32K or 256K bytes. The hand-held unit measures 6.7 in. long by 3.8 in. wide by 1.3 in. deep and weighs less than 18 ounces, the vendor said. It has a 51-key color keyboard that shifts to include all 128

ASCII characters. An optional scanner — either a wand or light beam gun — can be plugged directly into the terminal for scanning bar codes.

The PDT III with 32K bytes of memory costs \$1,060 and with 256K bytes of memory costs \$2,010.

MSI Data, 340 Fischer Ave., Costa Mesa, Calif. 92626.

PRINTERS/PLOTTERS

■ **Western Graphtec, Inc.** has released an eight-pen plotter for sale to OEM users.

The MP 2000 flatbed B/A3-size plotter features a speed of 10 in./sec. in the drawing mode and 16 in./sec. when the pen is raised. Five types of pens are available for the MP 2000:

Continued on page 78

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From page 73

Sun Microsystems unwraps workstations

160M monochrome workstation; and the Sun-3/75M desktop workstation.

The workstations have a standard 2M bytes of main memory with expansion capability to 16M bytes, except for the Sun-3/75M, which has a maximum memory of 8M bytes. The three workstations were designed to operate as diskless nodes in a network or, with the addition of local mass storage, as stand-alone systems.

The basic Sun-3/75M costs \$12,900, the Sun-3/160M costs \$20,900, and the Sun-3/160C costs \$31,900. Optional mass storage and backup systems start at \$8,500 for the Sun-3/75M and at \$7,900 for the Sun-3/160M monochrome and color workstations. Mass storage can be configured to provide from 71M bytes to 1.5G bytes, using multiple 380M-byte drives. Upgrades using 68020 microprocessors were announced in June for Sun-2 workstations and cost \$4,000.

The two file servers announced last week were the Sun-3/160S, a pedestal-style model, and the rack-mounted Sun-3/180S. The file servers feature 12 slots and can be configured with one or two 71M- or 130M-byte drives and up to four 380M-byte disks and a ¼- or ½-in. tape. The pedestal-style model costs \$17,900 without mass storage, and the rack-mounted version costs \$18,900 without mass storage.

The Sun-3 workstations and file servers are available now.

Sun also announced an optional floating-point accelerator board for the Sun-3 line. It was designed to increase floating-point performance four times over the baseline performance. It costs \$4,900 and will be available in the first quarter of 1986.

The two software products announced last week were the Sun Programming Environment (Sunpro) and Sun Visual/Integrated Environment for Workstations (Sunview). The products are bundled with Sun's version of Unix.

Sunpro is said to support rapid prototyping. According to Sun, once a user is satisfied with the functions of a prototype, a program can use Sunpro utilities for performance testing and tuning.

Sunview reportedly uses interface tools like windows, scroll bars, pull-down menus and pointing devices to help software engineers construct flexible, powerful user interfaces.

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SYSTEMS & PERIPHERALS

Continued from page 74

water base and oil base fiber tip, water base ballpoint, ink and water base ceramic pens. It is equipped with dual ports for either RS-232C or GpiB-IEEE/488 interfaces and has a 6K-byte memory buffer.

The unit costs \$1,290 in quantities of more than 250.

Western Graphtec, 12 Chrysler St., Irvine, Calif. 92714.

■ Dataproducts Corp. has released its CP-1800 check-printing system designed for branch banking, real estate, insurance and corporate cash management applications.

The unit combines a Dataproducts CP-40 magnetic ink character recognition (MICR) printer with an IBM Personal Computer XT in a cabinet. A \$500 word processing option allows the user to flip a switch and, after changing the ribbon and print wheel, use the printer as a word processor.

The system includes check-printing software and prints from eight to 15 char./in. At 12 char./in., it operates at 55 char./sec. The system will produce 15 checks per minutes at 8 char./in., printing three lines of text and one line of MICR code. In MICR only, the system will print 30 checks per minute.

The CP-1800 costs \$15,950. An automatic cutter/handling option, which cuts and bundles starter check sets, will be available in the first quarter of 1986 for \$2,000.

Dataproducts, 6200 Canoga Ave., Woodland Hills, Calif. 91365.

See PRINTERS page 80

From page 73

'Erased' tapes present potential threat to companies' security

only thing that usually happens is that minor changes are made in the file header so that the file is ignored. Erasing the file by applying direct current through the head as the file passes by does not do the job either, Manly's report said. The signal in such a case is reduced by about 20 db, which leaves a solid 10% of it still recoverable with only a few possible errors, according to Manly.

Even a good demagnetizing bulk erase, in which the tape is removed from the drive and put into a demagnetizing machine, does not completely do the job. Demagnetizing — or bulk erasure — is a good way to begin the elimination of data from a tape, Manly's report said, but it should be considered only the first step.

As a second step, users should write random bits on the full length of the media, avoiding recognizable patterns. Then the media should be stored for about a week at about 100° Fahrenheit to imprint the random bits firmly on the media. Tapes should be carefully wound before storage, and all media should be well supported so that distortion is unlikely, the report added.

Checks should periodically be run on each step of the process to ensure that they are working, the author advised. A wideband noise measurement after each bulk erase process will tell whether the erase is working, with residual signals showing up as periodic peaks in the noise spectrum. Temperature and sight checks should ensure that the tape is not curling in the warm space, he added.

The final procedure is to bulk erase again. There will still be a residual signal, but it will be of the random bit pattern, not the original signal, the report said.

Not everyone agrees that degaussed tapes can still be read. "We've had 1,600 cases [of breached computer security] since 1958, and none like that that I can recall," said

Don Parker, senior management systems consultant at the not-for-profit computer security research and consulting firm SRI International, Inc. in Menlo Park, Calif. There is residual information left on a degaussed tape, Parker added, but finding even partial data would take a tremendous amount of work and equipment.

Raymond Freeman, who publishes the "Computer Tape Outlook" analysis and forecast newsletter in Santa Barbara, Calif., has not come across the problem either. "I haven't spent time being concerned about it," Freeman reported. "There are people who recover accidental erasures [the National Security Agency]. I'm not familiar with the results." Freeman did not know of any commercial services that recovered residual data from tapes.

The Social Security Administration's (SSA) tapes are degaussed at its National Computer Center in Baltimore whether or not they will be reused, according to Deputy Press Officer John Trollinger. The tapes are then reused at the SSA or declared surplus and sold by the General Services Administration (GSA) to anyone who wants to buy them.

The SSA tests random samples of the tapes that will be auctioned off by the GSA and has never found one

with readable data on it, Trollinger said.

Herb Schantz, a vice-president of Graham Magnetics, Inc. in North Richland Hills, Texas, said he believes residual data is a problem. He said many of his customers have taken to destroying their old tapes with band saws to avoid expensive procedures to save them. Very large companies can justify the cost of the time, equipment and space required for making old tapes reusable, but most shops should just incinerate them, Manly said.

Media service bureaus are not set up to clean tapes as thoroughly as they need to be. If a user finds a bureau that promises to follow Manly's guidelines, the user should also make sure the service bureau can maintain security during the process, the report added.

Demagnetizing — or bulk erasure — is a good way to begin the elimination of data from a tape, but it should be considered only the first step.

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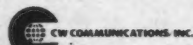
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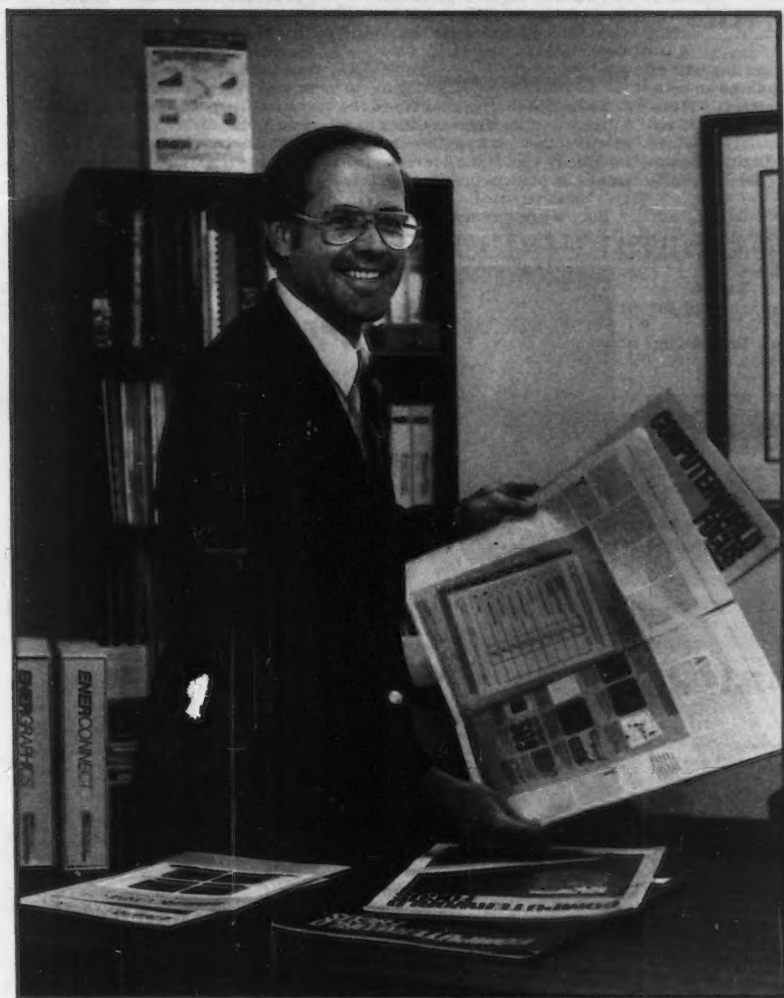
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*Randy T. Andes, Director of Marketing,
Enertronics Research, Inc., St. Louis, Missouri.*

COMPUTERWORLD FOCUS

SYSTEMS & PERIPHERALS

PRINTERS from page 78

■ **Spur Products Corp.** has released an adapter that is said to enable any Prime Computer, Inc. minicomputer to drive IBM 3211 printers, Storage Technology Corp. (STC) impact printers or Xerox Corp. laser printers.

The USA/Prime Universal Subsystem Adapter is said to give the system the capability of printing up to 3,000 lines of shaped char./min with an STC printer or up to 18,000 line/min. of dot matrix nonimpact printing with a Xerox 9700 printer. Used with an IBM 3211, the unit enables Prime users to have printer functions such as a sleep speed of up to 80 in./sec. and interchangeable print trains, the vendor said.

The USA/Prime Universal Subsystem Adapter for the Prime minicomputers costs \$6,000.

Spur Products, 13469 Beach Ave., Marina Del Rey, Calif. 90292.

■ **Versatec, Inc.**, a subsidiary of Xerox Corp., has released an interface board that is said to support output to Versatec electrostatic plotters from Digital Equipment Corp. Q-bus computers.

The Model 126 with software driver supports output from the Microvax I and II to any Versatec monochrome or color printer/plotter. The model offers long line plotting capabilities of up to 1,000 ft. The interface and driver support 22-bit addressing for the Microvax machines and 18-bit addressing for other VAX series systems.

The Model 126 costs \$2,000.

Versatec, 2710 Walsh Ave., Santa Clara, Calif. 95051.

GRAPHICS SYSTEMS

■ **KMW Systems Corp.** has announced its VP-200 graphics element processor that is said to convert vector data to raster form for use by printers.

The processor is said to be suited for controlling electrostatic, laser magnetic and ion deposition imaging devices. It supports both color and intensity-modulated devices.

The VP-200 features 512K bytes of raster memory that is expandable to 8M bytes, plug-in card modules that permit configuration of up to three output devices and optional IBM channel and mini interfaces.

The VP-200 with a parallel interface costs \$12,900 to start, with the price increasing depending upon additional memory or interfaces.

KWM Systems, 8307 Highway 71 W., Austin, Texas 78735.

POWER SUPPLIES

■ **Elgar Corp.**, an operating unit of Onan Corp., has announced an uninterruptible power system (UPS) targeted at IBM System/34 and 36 users as well as at a variety of other systems, including Digital Equipment Corp. VAX-11/730 and VAX-11/750 machines.

The T series UPS provides both 120V and 208V ac single-phase output power. It comes in either 5 kVA, 7.5 kVA or 10 kVA sizes.

Prices range from \$11,500 to \$18,000, depending upon the configuration.

Elgar, 9250 Brown Deer Road, San Diego, Calif. 92121.

From page 73

Please enter your cobfiuk

words for users. The option, available throughout the VAX product line, lets users select a password from approximately five generated randomly.

"It says, 'Choose a password from this list or hit return to get a new

' We've had to hit return several times to get an acceptable password," Welsh said. "Forize" may have been an exception, Welsh added, noting that most passwords

were unusable. He reported that a sample list gave him options such as "ropnaha, cobfiuk, ekgefwyk, ogudave and garmion."

"We reached the point where what people were going to start doing was writing their passwords down, which is a bigger problem than having them choose their own," Welsh added.

Choose their own password

So Ex-Cell-O officials disabled the password option and went back to choosing their own passwords, such as "[their] Aunt Millie's favorite preserves, an obvious breach of security," Welsh reported.

But the mystery remains: Who did it?

Officials in DEC's Microvax group said they wouldn't have done it. They said that if they had done it, Ex-Cell-O's problems would have shown up in other users' systems. The password feature is in the operating system itself, not in the individual machines, according to DEC.

No other complaints

Kallis noted that there had been

no other complaints about such rude words from users with any VAX machines.

Kallis reported that the password feature was designed to avoid words that

users might find offensive, and that the system shouldn't present any of 90 nasty words on a list that DEC compiled.

If neither DEC nor the Ex-Cell-O programmers are to blame for the glitch, could the insults Welsh received have been mere coincidence? That may never be answered. At least the computer worked although Welsh criticized the Microvax I for its poor response time.

Some bugs bog down entire systems, Welsh said.

Just in case the culprit is found, Welsh has a suitable punishment: Assign that person the password "Flogme" and hope the perpetrator's coworkers act on that "very sage advice."

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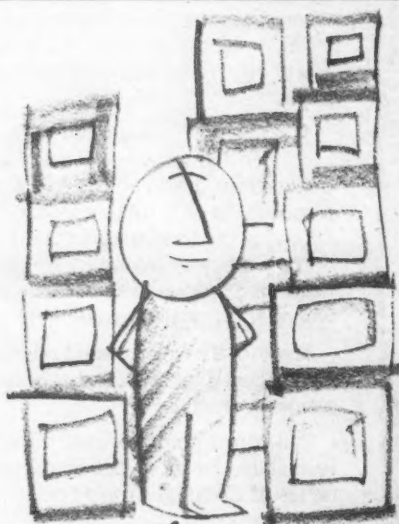
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COMPUTER INDUSTRY

No big changes foreseen for Sterling acquisition

Yet buy-out heralds exodus of Informatics execs

By Clinton Wilder

No further upheaval is expected in the internal organization and product lines of Informatics General Corp. in the near future as Sterling Software, Inc. moves to finalize its acquisition.

That is the view of Sterling executives and software industry analysts. However, most of Informatics' top executive staff departed prior to final approval of Sterling's buy-out proposal.

Sterling will "absolutely continue to support" Informatics' older software packages such as Mark IV, according to Phillip A. Moore, Sterling's senior vice-president of business development. Although Sterling is weighing alternatives to make Informatics more profitable, no relocation or liquidation of any product divisions are planned, Moore said.

"We are taking a look at where there

would be potential synergies between Informatics' products and ours," Moore said. "We have not planned any consolidation because that implies moving one group to another location. Each division will continue to operate — with certain changes."

Moore declined to elaborate on what those changes will be, but so far, most of the change has occurred at the top. As expected, Informatics Chairman and President Walter H. Bauer resigned Sept. 1, leading the exodus of 65 of the 70 Informatics executives based at corporate offices in Woodland Hills, Calif. The Woodland Hills office will close by Nov. 1, with all top executive functions moving to Sterling headquarters in Dallas.

The only top Informatics corporate officers to remain with Sterling in their former positions are Richard C. Lemons, exec-

Continued on page 90

Datapoint saga a real cliff-hanger

By Peter Bartolik

The unceasing soap opera of Datapoint Corp. continues, and determining a logical ending may prove to be tougher than figuring out who shot J.R.

One clear point is that New York financier Asher B. Edelman has been with the company much longer than anyone expected after he won effective control in March.

ANALYSIS

Everyone expected to see an encore of his winning strategy at Management Assistance, Inc. last winter, when he browbeat the board of that company into accepting his plan to sell off parts of the company — the Sorbus, Inc. service division and the MAI/Basic Four manufacturing division — for a greater amount than the trading value of the company's shares.

Two weeks after taking over, Edelman said he was going to continue to operate the company, but analysts saw that as a bluff intended to obscure the widely held belief that Edelman's asking price — some \$300 million — was more than a fair market value for the company.

Well, the service arm was spun off into a new company, Intelogic Trace, Inc., with the stock distributed to Datapoint shareholders, and already one bid, by TRW, Inc. for \$177 million, has been turned down. And Edelman has offered to raise \$100 million to buy the remainder of Datapoint and take it private.

For customers, this must be the worst of times. Figuring out exactly where the company is going is no easy task.

The buy-out plan was received with much skepticism by analysts who said it is probably the best deal shareholders will ever get, but countered that Edelman merely wants to capitalize on some \$200

Continued on page 90

■ The recent failure of a Dallas bank could cost Flexible Computer \$250,000/85

■ Compugraphic joined the crowd of vendors that has cut costs by cutting employees/86

■ Semiconductor manufacturer Micron Technology fired off another salvo against Japanese competitors with the filing of an antitrust suit/87

Japan to sell high-tech patents

By Takehisa Kondoh
Special to CW

TOKYO (CWN) — Japan is stepping up a campaign to boost sales of government laboratories' research and development results and patents to cope with growing foreign interests in its high technologies.

Leading the way is the Agency of Industrial Science and Technology (AIST), the Ministry of International Trade and Industry (MITI)-affiliated organization overseeing 16 state-run research labs.

The nonprofit Japan Industrial Technology Association, the exclusive nonprofit licensor of AIST's industrial properties and expertise, recently decided to send a 23-member mission of industrialists to

Sweden, the UK, Ireland, France and West Germany during October.

During a two-week stay in the European countries, the Japanese group will demonstrate part of AIST's 18,000 or so high-tech patents at seminars for local entrepreneurs, academicians and government officials.

Broad areas of those patents include new materials, electronics and bioengineering. In electronics, emphasis will be placed on the amorphous silicon solar cell, isothermal capacitance transient spectroscopy for semiconductor defects and the YAG laser.

The progressive Japanese move to open

Continued on page 87

Ashton-Tate earns 407% Sperry hitches its wagon to Unix star

By Peter Bartolik

CULVER CITY, Calif. — Ashton-Tate last week announced second-quarter profits of \$3.4 million, or 37 cents per share, up 407% from year-earlier profits of \$682,000, or 7 cents per share.

Revenue for the quarter was \$27.5 million, a 43% increase compared with revenue of \$19.2 million in the second quarter a year ago.

The firm said the large increase in revenue and profits was due largely to sales of its Dbase III product.

International sales surged in the second quarter, compared with a year earlier, and the company said it will continue to place major emphasis on international sales. "The international market is growing more rapidly than the U.S. market, and we plan to capture a large share of that market," said Edward M. Esber Jr., president and chief executive officer.

After decades of cultivating and captivating a mainframe customer base with proprietary products, Sperry Corp. last year decided to hitch its wagon to the concept that AT&T's Unix operating system would become an industry standard.

To a company that had watched IBM capture the lion's share of the mainframe market, the possibility of a standard evolving outside of IBM's control certainly holds allure. In fact, literally hundreds of companies have grasped at the prospect that Unix may someday provide users with the ability to port existing applications across vendor lines, thereby breaking the stranglehold of proprietary architectures.

That is not to say Sperry is in any hurry to relinquish its own mainframe installed base. At that level, the company offers a Unix-based SX 1100 product running as a guest operating system under its proprietary

OS/1100 operating system.

But last year, Sperry attempted to shake off its image as a mainframe vendor with an array of microcomputer-to-superminicomputer products based on versions of the Unix operating system.

In the fiscal year ended March 31, Sperry boasted a 16% revenue increase and an even heftier 32% increase in profits. During the quarter ended in June, while many systems vendors experienced lagging sales, Sperry posted a 20% revenue increase and a 23% increase in operating profits.

According to two executives of Sperry's microsystems group, the new products contributed substantially to the increased bottom line. But, they added in a recent interview, that was not accomplished by selling much-needed lower end products to existing mainframe customers. "Only 10% to 20% of the new products went to installed-base cus-

tomers," according to Joseph E. Gariano, director of micro products marketing, Americas division.

If anything, said Neal M. Waddington, director of product strategy, microsystems, Sperry "really has not emphasized the installed base" in its nonmainframe sales strategy. That, however, will soon change as the company educates its mainframe salesmen on the need to sell a full line of systems to existing customers, the executives said.

Sperry is selling itself as a systems integrator that can pull together many pieces to serve customer needs. It has taken that role literally, depending on other vendors to supply the actual hardware. "If you take a strictly proprietary approach, you can't keep up with the technology," Waddington said. He added, however, that even when it purchases a box from another vendor, Sperry usually has a comparable machine in devel-

Continued on page 86

DEC vs. The Contender is a

In this corner: DEC, with the VT 100/220*—real heavyweights, listing at more than \$1500 and \$1095. Over there, the contender: Ampex, with its fully protocol compatible 219 and 220, both weighing in under \$750.

How does the competition measure up?

DEC's 12" green screens are 33% smaller so visibility's limited. (Ampex offers 14" amber or green screens at no extra cost.) Ampex's moves include tilt and swivel, while DEC only tilts.

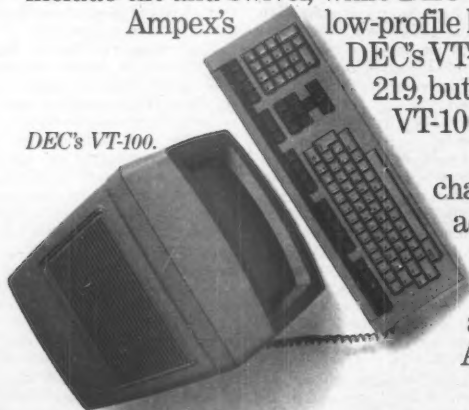
Ampex's low-profile keyboards adjust for slope; DEC's cannot.

DEC's VT-100 keyboard layout is similar to Ampex's 219, but handicapped by its function keys: the VT-100 has none, our 219 has 16.

Instead of the VT-100's two resident character sets, Ampex's 219 has nine—so it can adjust easily to performing in foreign arenas.

And our 219 offers two 80-column pages of display memory standard plus two more as an option. But that's not all that makes Ampex an odds-on favorite.

DEC's VT-100.



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The Ampex 220. (219 similar, not shown.)

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COMPUTER INDUSTRY

Trade secret laws protect software concepts, ideas

THIRD IN A SERIES

By Jerome Roberts
and Michael Brownell
Special to CW:

Trade secret protection extends to an area not covered by copyright protection and, therefore, must be looked upon as an important, indeed often critical, complement to copyright protection. Copyright protects only the expression of the idea and not the idea itself. Trade secret status protects the idea in addition to its expression.

Trade secret protection is not afforded under a federal statute as is copyright protection but rather has been developed over the years as

part of the common law that has been codified in several states that have adopted the Uniform Trade Secrets Act. Consequently, the availability, applicability and scope of trade secret protection is less certain than copyright protection.

Only information (for example, software logic, design concepts and coding) created or discovered by the business, not generally known and that provides the owner thereof with a competitive advantage over its competitors who do not know of or use it, is eligible for trade secret protection. Thus, the essence of such protection is a competitive advantage dependent upon secrecy.



The requirement of a competitive advantage is not subject to precise definition and must be assessed in light of the facts of each case. Software elements need not be novel in the sense of a patentable invention.

However, concepts that have no independent economic value will not likely constitute trade secrets.

As a general proposition, software that satisfies the secrecy requirement discussed below should be considered to contain trade secrets to the extent that knowledge of its logical composition would be of value to the owner's competitors. Often this value is evidenced by the ability of a competitor

acquiring trade secret information to eliminate its own independent software development activity and, thereby, obtain a marketing advantage. It should be noted, however, that unlike patent protection, two parties can independently develop and own a trade secret.

SECRECY REQUIREMENT

Secrecy is an essential element of a trade secret. Because maximizing the value of a trade secret normally requires some disclosure thereof (that is, to employees, consultants, customers and so forth), the law does not require absolute secrecy but, rather, "relative secrecy." There is no clear prohibition against revealing a trade secret through reverse engineering unless such a prohibition is contained in a contract between the parties. Therefore, a critical issue concerns the procedures implemented by a software owner to create such a relationship upon disclosure and thus protect the confidentiality of its trade secrets, both within its organization and upon distribution of the software.

Secrecy must also be maintained in the user environment. Written contracts in the form of licenses and, where appropriate, separate confidentiality agreements, must be used. All software intended for commercial distribution should be licensed pursuant to a carefully drafted license agreement, containing adequate restrictions on use, duplication and disclosure, and all evaluation presentations should be preceded by each potential licensee executing a confidentiality agreement. Source-code distribution as well as distribution of other materials that may explain software trade secrets should be avoided, and reasonable physical measures such as code, encryption, machine serialization and so forth are strongly recommended.

MICROCOMPUTER SOFTWARE

The existence and protection of trade secrets in mass-distributed microcomputer software is a difficult and much-debated issue. Some commentators feel that mass distribution of software, combined with the relative ease of extracting the logic thereof, terminates trade secret protection. Others argue that through written contracts, including shrink-wrap licenses, trade secret protection can be maintained even in the context of mass-marketed software.

Ultimately, the courts will have to strike a balance between the rights of the licensee, the rights of the software owner and the desire to promote commerce in this industry.

TRADE SECRET REMEDIES

The legal remedies available to an owner upon learning that its trade secrets are being wrongfully used include requesting a court injunction to prevent or restrain further wrong-

Continued on page 87

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- Training of existing staff
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- Supplier support

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Roberts and Brownell are attorneys with the law firm of Berman, Roberts & Kelly in Chicago. This firm's practice deals with legal issues relating to procurement, development, distribution, management and protection of computer resources.

COMPUTER INDUSTRY

Japanese consortium set

Trio seeks support for AI development

By Takehisa Kondoh
Special to CW

TOKYO (CWN) — Three firms are putting the finishing touches on plans to set up a Japanese consortium for late this month with the ultimate goal of establishing trilateral cooperation between Japan, the U.S. and Europe in artificial intelligence development.

The trio — Nissin Software Co., Structural Planning Institute and JGC Corp. — will eventually be joined by seven other Japanese firms, according to Nissin President Kazuro Fujimoto, who refused to identify the seven firms.

The planned joint venture, tentatively named Intelligence Engineering Research Institute (IERI), will be staffed by approximately 30 specialists from member companies. Its charter will pursue overall research and development on AI and explore ways to commercialize AI software, Fujimoto told CW Network during a recent interview.

On behalf of IERI, Nissin, Structural Planning Institute and JGC are also reportedly negotiating technological cooperation with unspecified U.S. organizations.

Fujimoto said IERI will soon finalize ties with the German Center for Computer Science, West Germany's semigovernmental institute specializing in AI and other information science. A spokesman said that under the terms of this agreement, the center will provide IERI with support

software for an AI development, called Babylon, a tool for designing expert systems.

Details of the German Center-IERI cooperative agreement have not yet been disclosed, but Fujimoto said that it will call on the Japanese group to supply its AI application expertise to the German Center and to initiate and enlarge joint efforts in commercializing these applications.

Fujimoto stressed that bilateral collaboration between the German Center and the Japanese jointly founded firm should grow into an international cooperation that will involve U.S. AI leaders.

Kondoh is international editor/*Asia for CW Network.*

National Semi arranges nine-day fall shutdown

SANTA CLARA, Calif. — The bad news continued for employees of National Semiconductor Corp. when the hard-hit chip maker recently informed its workers that it will shut down its U.S. and European operations for nine nonconsecutive days this fall.

The furlough, which affects 8,000 to 9,000 of National Semiconductor's 12,500 worldwide employees, is a continuation of the cost-cutting plan announced by the company in August. The shutdown will reportedly take place during National Semi's second quarter, which runs from

Sept. 22 to Dec. 15.

National Semiconductor ordered a similar five-day furlough during the current quarter. Last June, the company laid off approximately 1,300 employees.

National Semiconductor is mired in the worst quarter in its history, and company President Charles E. Sporck has said he sees no signs of recovery in the near future.

The firm posted an operating loss of \$44.3 million in the first two months of the current first quarter, and the total loss for the quarter is expected to be even greater.

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Bank failure hits Flex/32 maker

DALLAS — The recent failure of the Parkwest Bank could mean a quarter-million dollar loss for Dallas-based Flexible Computer Corp. However, the company said the setback will not have a significant impact on operations.

Flexible Computer, maker of the Flex/32 parallel processing superminicomputer, reported its funds on deposit at Parkwest exceeded the amount insured by the Federal Deposit Insurance Corp., which shut down the bank at the close of business Aug. 22. The bank reopened under new ownership the following week.

Company spokesman Ron Hammond said the funds, which were letters of credit required by lessors of capital equipment to Flexible Computer, included up to \$250,000 in unrecoverable funds.

Hammond said that amount is the company's maximum exposure and represents approximately 5% of Flexible's cash assets as of June 30. "We are making an effort to recover all of those funds," Hammond said. "The final result will be reflected on our financial statements when appropriate."

Flexible Computer reported sales of approximately \$200,000 for the quarter ended June 30.

COMPUTERWORLD

COMPUTER INDUSTRY

Wang appoints top executives

LOWELL, Mass. — Wang Laboratories, Inc. recently announced the resignation of one top officer and the promotion of two others.

Executive Vice-President Jon F. Kropper, who formerly directed Wang's worldwide manufacturing operations, will leave the company Oct. 1 to become president and chief operating officer of Hadco Corp. of Salem, N.H. Hadco is a major supplier of printed circuit boards used in Wang products.

Replacing Kropper at the executive vice-president level is J. Carl Masi, who will continue to direct Wang's in-

ternational sales and marketing.

An 11-year Wang veteran, Masi has become increasingly visible since former President John Cunningham's departure, leading observers to consider him the leading candidate outside the Wang family for the presidency.

Frederick Wang, the son of Chairman An Wang, is also

an executive vice-president.

The office automation company also announced the promotion of Ian Diery to senior vice-president for European, African and Middle Eastern operations.

Chairman Wang assumed the president's chair when Cunningham departed in July to head Computer Consoles, Inc. of Rochester, N.Y.

Firm cuts staff by 5%

WILMINGTON, Mass. — Compugraphic Corp. recently announced a layoff of 250 employees, or about 5% of its total work force, in an attempt to reduce expenses.

The company said it has experienced a slowdown in orders for its graphics communications equipment and that the layoff was needed to balance expenses with the current revenue level.

Affected employees included both salaried and hourly workers. The company said it will provide out-placement services to assist those employees in finding new jobs.

The action reduced the company's total work force to approximately 4,700 employees.

From page 81

Sperry hitches its wagon to Unix star

opment. "If we can compete favorably, we will take our own products to market," he said.

Waddington said that the company believes that despite problems, Unix is effectively becoming a standard to which all vendors must offer links. Sperry, he said, wants to be first with a complete line of Unix-based machines.

However, the company offers Microsoft Corp.'s Xenix version of Unix System 3 on single-user microcomputers, AT&T's Unix System V on supermicrocomputers and System V and another Unix version, University of California at Berkeley's 4.2, on superminicomputers.

But Waddington said the company is confident that Microsoft's promised update of Xenix will be compatible with System V.

Like other mainframe vendors, Sperry sees the influx of networked workstations and minicomputers as leverage to increase sales of mainframes. "The mainframe is a very important backbone to networks of systems," Waddington said. "We see the mainframe as more the keeper and dispenser of data and less of an application machine."

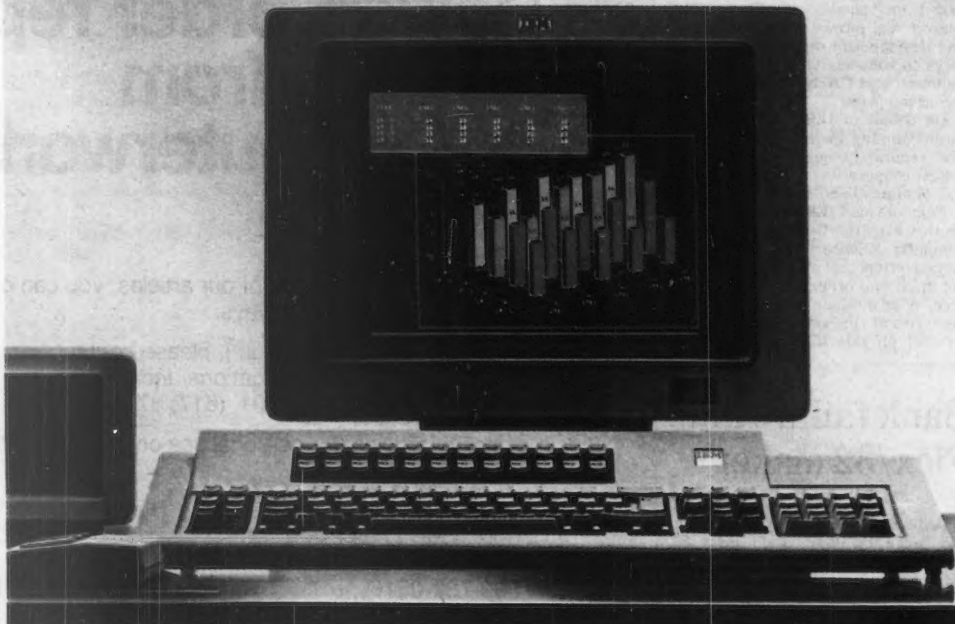
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tablet. What's more, you can select from a wide range of colors, lines and type styles to arrive at a presentation that works the best for you.

If you want to create foils for a business meeting, just zoom and scroll to position the graphics you want to reproduce. Then use IBM's Picture Plotting to plot the results. You also get a handy graphics index, so you can file and retrieve pictures for future presentations.

But there's more to the 3270 PC/G or GX than just pretty pictures. Each system can display up to four host graphics

COMPUTER INDUSTRY

Chip maker files antitrust suit

BOISE, Idaho — Micron Technology Co. fired another salvo in its battle with Japanese chip-making competitors recently by filing a \$300 million federal antitrust suit against six companies. The suit is considered the first civil litigation against Japanese firms in the semiconductor industry.

Micron claimed antitrust and chip-dumping practices by Hitachi Ltd., NEC Corp., Toshiba Corp., Mitsubishi Electronics Corp., Oki Electric Industry Co., Fujitsu Ltd. and their U.S. subsidiaries. Micron charged that the six

firms conspired to monopolize the chip industry, individually used predatory pricing tactics and sold their products in the U.S. below their manufacturing cost.

The lawsuit came after a recent favorable preliminary ruling by the U.S. International Trade Commission on Micron's antidumping petition [CW, July 8] to the U.S. Commerce Department against the same companies and Matsushita Electric Industrial Co. On Aug. 2 the commission voted unanimously to continue the investigation.

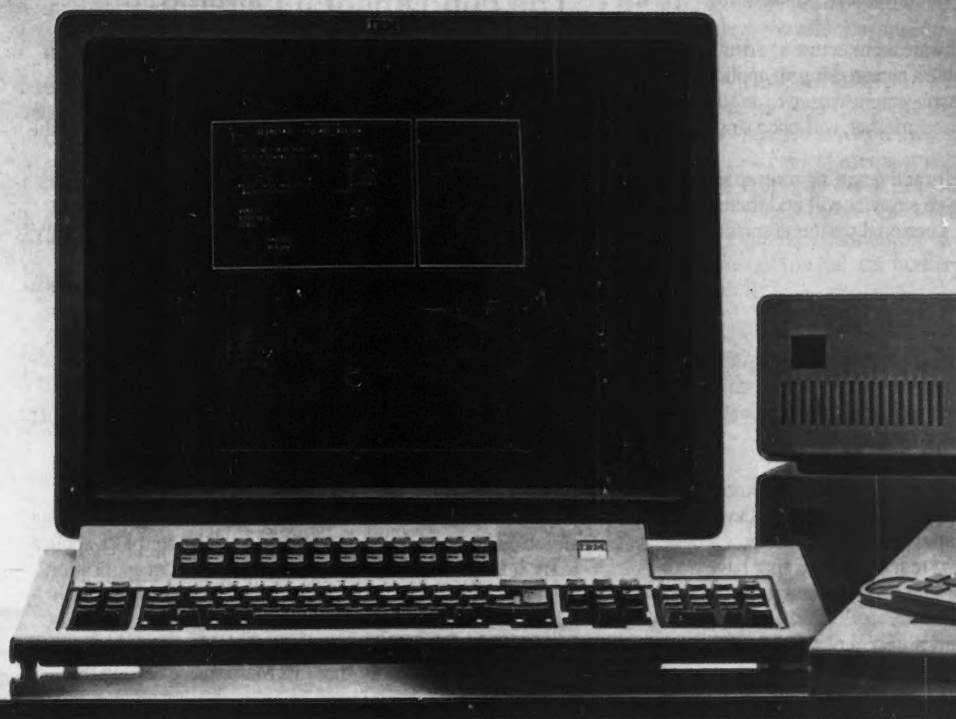
From page 84

Trade secret laws protect software

ful use of the trade secret, including the marketing of products based upon such a trade secret; and recovering damages from the infringing party equal to the actual loss suffered by the owner or the profits wrongfully received by the infringing party, whichever is greater. In some states, criminal sanctions may be available.

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From page 81

Japan to sell high-tech patents

its technological door to foreigners coincided with Miti's recent agreement to allow IBM to use all the computer patents held by Aist.

A basic agreement, reached at the end of July, ended IBM's request for full access to the Japanese government's computer patents.

A Miti source, who asked not to be identified, said that the agreement, covering the period from 1986 to 1990, called on Aist to provide the U.S. maker with an all-inclusive right to execute related Japanese rights. Approximately 430 patents are initially subject to the IBM-Aist pact, the Miti source said.

Part of these patents apparently relate to joint developments between Aist labs and Japan's six largest computer builders, including Fujitsu Ltd., NEC Corp., Hitachi Ltd. and Toshiba Corp.

Some opposition

Some Japanese electronics executives oppose the computer patent agreement, claiming it will set a precedent for an uncontrolled outflow of Japanese technological know-how and will have serious ramifications involving piracy.

The October mission will be the third of its kind. A similar delegation was sent to France, Sweden and West Germany in 1983 and to the U.S. and Canada in 1984.

In an interview with CW Network, Hiroshi Tagaya, general research manager of the Japanese Industrial Technology Association, said that he hoped the association's patent and sales tours would help to improve the reception of Japanese industries abroad.

"Such efforts may spawn ties between Japanese and foreign firms, increasing the chance for [Japanese] firms to shift to overseas users when home markets get saturated," he said.

Traditionally, Japan had depended heavily on advanced foreign countries for innovative technologies, a fact that forced its outward technology transfer to remain at low levels.

Kondoh is international editor/Asia for CW Network.

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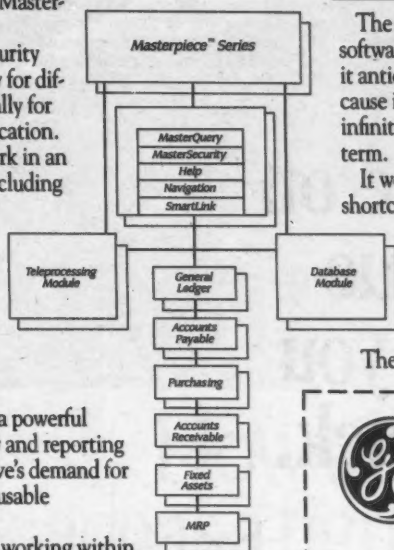
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COMPUTER INDUSTRY

From page 81

No big changes foreseen for Sterling acquisition

utive vice-president of systems, and Vice-President Jeannette Meier Zacker, the company's top legal officer. Lemons has moved to an Informatics office in Canoga Park, Calif., while Zacker has moved to Dallas.

James R. Porter, applications executive vice-president and No. 2 man behind Bauer, resigned to become president of Triad Systems Corp. in Sunnyvale, Calif., [CW, Aug. 19].

Sterling spokesman Ray Hannon denied industry rumors that Bauer received a special financial incentive for resigning. "No special arrangements were made," Hannon said. "It had been foreseen from the very beginning of the attempted hostile takeover that he would leave. He was en-

titled to the same consideration as all employees who left, with compensation based on salary, position and seniority. In most cases, it was Sterling's policy to improve upon the normal Informatics severance package."

Final stamp of approval

Informatics shareholders met last week to put the final stamp of approval on Sterling's \$27 per share buy-out package. Informatics agreed to the offer in June [CW, July 1] after months of fighting against it when Sterling's unfriendly takeover price was \$26 per share.

"The operating philosophy of Sterling is to run as decentralized as possible," said Informatics spokeswoman Carol Hays. "It appears there will not be major changes in areas such as marketing and research and development."

Analysts who follow the two software houses agreed that it is in Sterling's best interest to disrupt the Informatics user base as little as possible.

"Sterling has been eager to acquire new clients, and [Informatics'] Mark IV and Mark V are as widely installed as any products out there," said Ann Morley, a software analyst with International Data Corp. in Framingham, Mass. "The attraction of those accounts was a big factor in Sterling's interest [in the acquisition], so I don't think they will make drastic changes."

Morley said consolidation of research and development and marketing efforts for some products, such as Sterling's Dylacor and Informatics' Answer/DB, is likely. "It would be silly to maintain a fragmented marketing and R&D organization for sim-

ilar offerings," she said. "Informatics has been pretty inconsistent in marketing in the past."

But Sterling is expected to take a hard look at each of Informatics' businesses in an effort to raise cash quickly. "Sterling will be looking to reduce the debt, and the way to do that is to enhance profitability or sell other parts of the business," said John Turo of the Houston investment firm of Rotan Mosie, Inc.

A likely candidate for sale may be Informatics' professional consulting services business, which has been profitable but has little synergy with the company's product offerings. "Clearly the existing consulting business is too large," IDC's Morley said. "Informatics' determination to be a multiproduct and multiservices vendor contributed to its fuzzy image."

Informatics reported a \$579,000 loss on \$55.4 million in revenue for the quarter ended June 30 [CW, Aug. 12] although the firm attributed the decline to \$2 million in costs for its proxy fight during the early stages of Sterling's hostile takeover bid.

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From page 81

**Datapoint saga
real cliff-hanger**

million in assets that Datapoint encompasses. Edelman said in a recent interview that reaction to his moves has always been skeptical "since I've been in the business of acquiring companies." He added, "The only way to deal with that is to do what I'm supposed to do when I get there."

Now that \$277 million has been bid for the Datapoint entities — just shy of the original \$300 million asking price — it is somewhat incongruous to impugn Edelman's motives.

But the guy is also representing investors in his arbitrage partnerships, and his modus operandi to this point suggests that his business goals depend on being able to liquidate his initial investments quickly and at a substantial profit.

Craig Symons, an industry analyst with the Gartner Group, Inc. of Stamford, Conn., noted that Edelman bought two million shares in Datapoint for an average price per share of \$17 but that the current per-share trading prices of both Datapoint and Intelogic Trace totaled only about \$15. In Symons' view, Edelman's previous plans "haven't worked out for him because he didn't understand what he was getting into."

Datapoint posted a \$28 million loss in the third quarter and, according to Symons, must still be losing millions on a revenue base that isn't increasing. The company recently said it will be several weeks late posting financial results for the fourth quarter and fiscal year ended July 27.

Edelman said, however, that the fourth quarter was ahead of plan. And he argued that taking the company private will enable him to make it more efficient; he has previously implemented some streamlining. He also promised that products introduced in recent weeks will be delivered on time. Both factors should encourage existing customers, he said.

That may be so, but customers certainly have to be concerned about the changes in strategy outlined so far this year. There are still a great many skeptics who think that, in Symons' words, "This is just another chapter in the continuing saga — or maybe tragedy is a better word for it."

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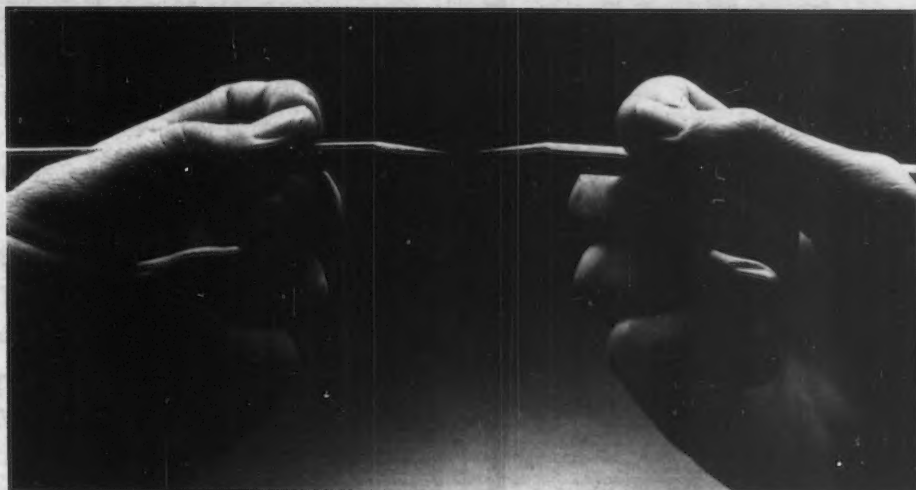
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Responsible for assisting software development managers with definition and implementation of tasks in software project planning, procedures, Unit Development Folders, proposal writing and cost estimation of government-type programs. BSCS, EE or Math with six plus years experience. Experience with VAX, PASCAL and MIL-SPEC standards required. These individuals will eventually assume roles in software management.

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Responsible for implementing the tasks defined below on software development projects. These engineers will report to project leaders. BSCS, EE or Math with six plus years experience in definition, design, development and delivery of software systems, utilizing VAX or Motorola 68000 computers. Required fluency in PASCAL, structured FORTRAN, MACRO-11 or Assembly languages. Experience with MIL-SPEC standards required.

SENIOR VMS SPECIALISTS

Responsible for definition, development and enhancement of software development environment on VAX systems, BSEE (MS) or CS with seven plus years related experience with VAX systems in PASCAL fluency required. Must be VMS internalist within I/O driver systems. Defense environment background a plus.

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Responsible for design, coding, and testing of systems level software. Position requires minimum of BSCS or BSEE degree with at least two or more years experience with the VAX 11/750 or 780 and VMS operating systems. Experience in one or more of the following areas is desirable: MIL-Standard documentation, UYK series computers and real time signal processing architecture.

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Responsible for development and maintenance of on-line systems in

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Responsible for the installation of IDMS in an IBM OS/MVS environment, for the design and maintenance of the data base and related data dictionary, and for the development and enforcement of standards and procedures for its usage. Requires a college degree and three to five years data base Design/Administration experience.

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Requires experience in developing computer communication networks using X.25 protocol and using Fortran 77 as a development language. Knowledge of HP-1000 and Gould SEL 32/97 computer systems or DS/1000, ACX-32, RTE-A or MPX-32 software systems is desired. Requires good verbal and written communication skills and familiarity with military requirements for software documentation, BS degree in Computer Science (or similar degree), and at least 5 years of experience in software development.

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Physical environment includes IBM 4381 and 4341 host processors and numerous distributed Data General, Hewlett Packard, and Series I mini-computers. Current mainframe software includes VM, DOS/VSE with CICS, VTAM, VSAM, VOLLIE, LIBRARIAN, DYNAM-T, DYNAM-D, and ZEKE.

General requirements include a working knowledge of IBM medium to large scale systems operating under VM and DOS/VSE. Experience with MVS is highly desirable. Must have five to six years of operations experience with at least three years of management experience. A Bachelor's degree in a related field is desirable.

Manager, Patient Management Systems, responsible for management of in-house analysts and programming personnel, contract programmers, software vendors, and consultants in order to successfully manage the delivery of patient accounting systems to multiple hospitals. Application software is MEDIPAC Patient Accounting and ADT with additional systems planned for 1985 and beyond.

General requirements include experience with healthcare business office systems and IBM medium to large scale systems. Hands on experience with MEDIPAC is highly desirable. Candidates should have a minimum of five to six years of experience demonstrating substantial responsibility for management at the project level and above. A Bachelor's degree in a related field is desirable. An advanced degree would be a plus.

Senior Systems Analyst, Patient Management Systems, responsible for major systems development projects within the Patient Management Systems department of HealthOne's systems development group. Work with end user managers and end users to define business requirements. Perform analysis and design activities to support programmers with systems specifications. Evaluate vendor product offerings against requirements.

General requirements include experience with healthcare business systems and IBM medium to large scale systems. Hands on experience with MEDIPAC is highly desirable. Candidates should have a minimum of four to five years of experience demonstrating two to three years systems analysis experience with a prior background in programming. A Bachelor's degree is preferred which may be offset by additional experience.

These positions will be attractive to persons whose qualifications match or exceed the requirements. We offer these positions in a challenging environment with competitive compensation and with an attractive benefit package.

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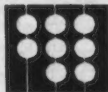
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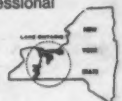
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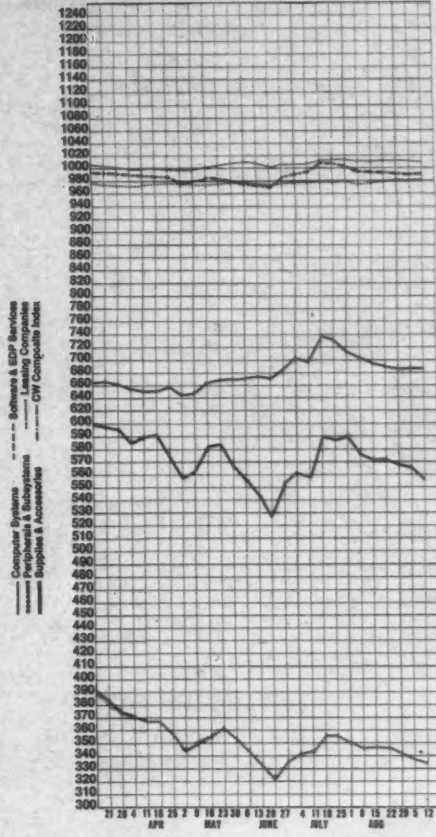
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Computerworld Stock Trading Index



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Cambridge, Mass. 02139

Computerworld Stock Trading Summary

CLOSING PRICES YESTERDAY, SEPTEMBER 11, 1985

| PRICE | | | | | | | PRICE | | | | | | | PRICE | | | | | | |
|------------------|----------------------|---|---------|---------|--------|--------|-------|-------------------------|---|-------|--------|--------|--------|-------|----------------------|-------------------|--------|--------|--------|--------|
| E | C | H | 1985 | CLOSE | WEEK | HIGH | E | C | H | 1985 | CLOSE | WEEK | HIGH | E | C | H | 1985 | CLOSE | WEEK | HIGH |
| N | | | RANGE | SEP 11 | NET | CHANGE | N | | | RANGE | SEP 11 | NET | CHANGE | N | | | RANGE | SEP 11 | NET | CHANGE |
| M | | | (1) | 1985 | | | M | | | (1) | 1985 | | | M | | | (1) | 1985 | | |
| COMPUTER SYSTEMS | | | | | | | | | | | | | | | | | | | | |
| D | ALPHA MICROSYSTEMS | | 9-12 | 3 1/8 | -1/8 | -4.6 | D | ADVANCED COMP TECH | | 2-4 | 4 | 3/8 | -3/8 | -18.1 | H | COMPHGRAPHIC CORP | 23-37 | 34 3/4 | -1 1/4 | -4.8 |
| G | ALTRIS COMPUTER SYST | | 7-14 | 10 | -1/8 | -1.2 | H | ADVANCED SYSTEMS INC | | 8-20 | 12 5/8 | 5/8 | +5.2 | | COMPUTER TRANSMITTER | 1-4 | 3 1/2 | 0 | 0.0 | |
| A | ARMING CORP | | 10-18 | 13 1/2 | -1/2 | -6.4 | H | ASS COMPUTERS INC | | 10-17 | 15 1/2 | 1/8 | -0.8 | H | COMPUTERVISION CORP | 12-48 | 13 | -1/2 | -3.7 | |
| A | APPLE COMPUTER INC | | 16-21 | 18 1/2 | +5/8 | +6.2 | G | AMERICAN SOFTWARE | | 7-15 | 12 1/4 | -3/4 | -9.7 | H | COMTRAC CORP | 13-18 | 13 7/8 | +3/8 | +2.7 | |
| N | AT&T | | 23-28 | 23 1/8 | -1/8 | -0.4 | H | ANACOMP INC | | 1-6 | 2 | 1/4 | -7.6 | H | CYBERNETICS CORP | 11-24 | 12 1/8 | -3/8 | -3.5 | |
| N | BARRONS CORP | | 51-66 | 64 1/2 | +1/4 | +0.3 | G | ANALYSTS INTL CORP | | 2-11 | 9 | 0 | -0.0 | H | CYBERNETICS CORP | 3-7 | 6 1/2 | +1/8 | +15.5 | |
| D | COMPAR COMPUTER CP | | 4-12 | 11 | +1/8 | +1.1 | H | APPLIED DATA RES | | 22-40 | 23 1/2 | +1/2 | +2.1 | G | DATACORP INC | 5-9 | 8 | -1/8 | -2.0 | |
| N | COMPUTER AUTOMATION | | 3-9 | 7 1/2 | -1/2 | -6.4 | H | ARTIST INTL INC | | 1-2 | 1 | -2 1/2 | -18.1 | G | DATA SWITCH CORP | 3-8 | 5 3/8 | 0 | 0.0 | |
| A | COMPUTER CONSOLES | | 9-20 | 7 5/8 | -1/4 | -3.1 | G | ASI COMPUTER SYSTEMS | | 11-24 | 10 1/2 | -2 1/2 | -18.1 | G | DECISION DATA CORP | 8-10 | 10 1/2 | -1/8 | -0.8 | |
| N | CONTROL DATA CORP | | 23-28 | 23 1/8 | -1/8 | -0.4 | H | ASTRAVINE CORP INC | | 1-3 | 2 3/4 | 0 | -2.2 | H | DEKTEL-SYSTEMS | 3-8 | 5 3/8 | 0 | 0.0 | |
| N | CONVENT TECHNOLOGY | | 5-17 | 8 | -7/8 | -8.8 | H | ATMATIC DATA PROD | | 28-35 | 30 1/2 | -2 | -6.0 | G | ENGRA, INC | 3-23 | 3 3/8 | -1/8 | -3.5 | |
| N | COPY CORP | | 1-8 | 4 3/8 | -1/8 | -2.0 | H | COMPUTER HARDWARE INT'L | | 18-26 | 23 1/2 | 0 | 0.0 | H | ENGLISH & SUTHERLAND | 8-10 | 17 3/4 | +1/4 | +1.3 | |
| N | CRAI RESEARCH INC | | 23-31 | 27 1/2 | +1/4 | +3.0 | G | COMPUTER HORIZONS | | 5-12 | 3/8 | 0 | 0.0 | H | GENSLIP TECHNOLOGIES | 8-20 | 5 3/4 | 0 | 0.0 | |
| N | DAILY SYSTEMS CORP | | 24-31 | 24 1/2 | -1/8 | -0.4 | H | COMPUTER HUBS | | 3-10 | 7 3/8 | -1/8 | -1.8 | H | GEN'L DATA CORP INC | 12-28 | 11 1/2 | -1/2 | -4.1 | |
| N | DATA GENERAL CORP | | 31-78 | 38 1/2 | -3/8 | -8.0 | H | COMPUTER RESEARCH | | 12-28 | 23 5/8 | +1/8 | +0.8 | H | HARVEST CORP | 3-28 | 27 1/8 | 0 | 0.0 | |
| N | DATACORP INC | | 18-22 | 18 1/8 | -1/8 | -0.4 | H | COMPUTER TASK GROUP | | 10-28 | 18 1/8 | -3/8 | -5.0 | H | INFORMATION INTL INC | 4-15 | 13 | -1/2 | -3.7 | |
| N | DELTAL EQUIPMENT | | 85-128 | 104 3/8 | +1 1/2 | +1.4 | G | COMPUTER USAGE | | 1-3 | 2 1/2 | 0 | 0.0 | G | INTEC INC | 9-28 | 5 1/8 | -1/2 | -6.8 | |
| A | DESI INC | | 12-18 | 15 | 0 | 0.0 | G | COMPUTING SYSTEMS | | 4-11 | 1 1/4 | +3/8 | +5.0 | G | INTEL CORP | 7-28 | 23 1/2 | +1/4 | +0.8 | |
| N | ELECTRONIC RESEARCH | | 12-18 | 15 | 0 | 0.0 | G | CONSERV CORP | | 1-8 | 2 7/8 | 0 | 0.0 | | | | | | | |
| N | FLORIAN DATA SYST | | 15-20 | 28 1/8 | -4 | -12.0 | G | CONVARE | | 8-10 | 10 | +1 1/4 | +14.2 | | | | | | | |
| N | FORDING | | 24-34 | 29 1/2 | -1/8 | -1.4 | H | COLLIERIE SOFTWARE | | 18-20 | 17 | +3/4 | +6.0 | A | LUNNEY ELECTRONICS | 6-14 | 13 3/8 | +3/4 | +9.3 | |
| N | FRANKS INC | | 20-32 | 28 1/2 | -1 1/8 | -4.0 | H | CYBERNETICS INC | | 4-13 | 5 1/4 | -1 | -18.0 | G | MEDIA DATA CORP | 6-13 | 4 1/2 | +1/8 | +2.8 | |
| N | GARRIS CORP | | 25-35 | 31 1/4 | -1/8 | -0.4 | H | DATA SYSTEMS INC | | 4-13 | 5 1/4 | -1 | -18.0 | H | MEDIA DATA CORP | 6-13 | 4 1/2 | +1/8 | +2.8 | |
| N | HEWLETT-PACKARD CO | | 31-44 | 33 3/4 | +1 1/8 | +3.0 | H | GENSLIP ELECTRIC CO | | 8-20 | 88 3/4 | -1/2 | -0.8 | H | MEDIA DATA CORP | 6-13 | 4 1/2 | +1/8 | +2.8 | |
| N | HONEYWELL INC | | 33-87 | 83 1/4 | +1 1/4 | +2.8 | H | GENL. SYSTEMS (E) INC | | 17-47 | 27 3/8 | +3/8 | +1.0 | H | MEDIA DATA CORP | 6-13 | 4 1/2 | +1/8 | +2.8 | |
| N | IBM | | 118-138 | 127 1/4 | 0 | 0.0 | H | GENSLIP ELECTRIC CO | | 8-20 | 88 3/4 | -1/2 | -0.8 | H | MEDIA DATA CORP | 6-13 | 4 1/2 | +1/8 | +2.8 | |
| N | IBM SYSTEMS INC | | 1-4 | 1 3/8 | -1/8 | -7.1 | H | INFORMATION RESEARCH | | 13-27 | 28 7/8 | 0 | 0.0 | H | MEDIA DATA CORP | 6-13 | 4 1/2 | +1/8 | +2.8 | |
| N | ITT CORP | | 24-37 | 33 3/8 | -5/8 | -1.8 | H | INFORMATION RESEARCH | | 13-27 | 28 7/8 | 0 | 0.0 | H | MEDIA DATA CORP | 6-13 | 4 1/2 | +1/8 | +2.8 | |
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